Roche Holding AG RHHBY (PINX) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

Roche's oncology and diagnostics leadership support a wide moat rating.

Updated Forecasts and Estimates from 05 Apr 2017

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Research as of 05 Apr 2017
Estimates as of 05 Apr 2017
Pricing data through 07 Apr 2017
Rating updated as of 07 Apr 2017

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

Contents

Investment Thesis 05 Apr 2017

We think Roche's drug portfolio and industry-leading diagnostics conspire to create sustainable competitive advantages. As the market leader in both biotech and diagnostics, this Swiss healthcare giant is in a unique position to guide global health care into a safer, more personalized, and more cost-effective endeavor.

In Roche's pharmaceutical division, blockbuster cancer biologics acquired with Genentech--including Avastin, Rituxan, and Herceptin--continue to grow quickly as they gain market share in approved indications and garner widened approval in new indications and emerging markets. Strong information sharing continues between Genentech and Roche researchers, boosting research and development productivity and personalized medicine offerings that take advantage of Roche's diagnostic arm. For example, BRAF inhibitor Zelboraf, approved in melanoma in 2011, is among the first drugs tested in biomarker-selected patients from the start.

Roche's biologics focus and innovative pipeline are key to the firm's ability to maintain its wide moat and continue to achieve growth as current blockbusters mature. Three fourths of Roche's top pharmaceutical sales are from biologics, which provides a buffer against traditional generic competition. With the launch of Perjeta in 2012 and Kadcyla in 2013, Roche is in a strong position to continue expanding its breast cancer franchise beyond Herceptin, regardless of biosimilars (which we expect as early as 2017 in Europe and 2019 in the U.S.). Gazyva, now approved in CLL and NHL, could also extend the longevity of the Rituxan franchise (biosimilars expected in Europe in late 2017). Avastin's lung cancer sales are vulnerable to competition from new therapies Opdivo and Keytruda, but Roche's own immuno-oncology drug Tecentriq launched in 2016.

Roche's diagnostics business is also strong. With a 20% share of the global in vitro diagnostics market, Roche holds the number-one rank in this industry over competitors Siemens, Abbott, and Ortho. Pricing pressure has been intense in the diabetes-care market, but new instruments and immunoassays have buoyed the core professional diagnostics segment.

Vital Statistics

Market Cap (USD Mil)	217,548
52-Week High (USD)	33.77
52-Week Low (USD)	25.25
52-Week Total Return %	3.9
YTD Total Return %	15.5
Last Fiscal Year End	31 Dec 2016
5-Yr Forward Revenue CAGR %	6.1
5-Yr Forward EPS CAGR %	8.4
Price/Fair Value	0.75

Valuation Summary and Forecasts

Fiscal Year:	2015	2016	*2017(E)*	*2018(E)*
Price/Earnings	20.4	15.7	*16.1*	*14.7*
EV/EBITDA	13.0	10.5	*10.8*	*10.0*
EV/EBIT	14.4	11.7	*12.0*	*11.0*
Free Cash Flow Yield %	5.0	5.5	*5.4*	*6.0*
Dividend Yield %	2.9	3.5	*3.2*	*3.6*

Financial Summary and Forecasts (CHF Mil)

Fiscal Year:	2015	2016	*2017(E)*	*2018(E)*
Revenue	48,145	50,576	*53,354*	*57,091*
Revenue YoY %	1.4	5.1	*5.5*	*7.0*
EBIT	17,542	18,420	*19,365*	*20,998*
EBIT YoY %	-0.5	5.0	*5.1*	*8.4*
Net Income, Adjusted	11,626	12,506	*13,636*	*14,968*
Net Income YoY %	-5.7	7.6	*9.0*	*9.8*
Diluted EPS	1.69	1.82	*1.98*	*2.17*
Diluted EPS YoY %	-5.6	7.8	*8.8*	*9.8*
Free Cash Flow	11,578	10,652	*12,017*	*13,280*
Free Cash Flow YoY %	160.6	-8.0	*12.8*	*10.5*

Historical/forecast data sources are Morningstar Estimates and may reflect adjustments. Analyst Note: Data displayed in CHF, except EPS (ex charges) and Dividends which are in USD and exclude amortization of intangibles, restructuring

Profile

Roche is a Swiss biopharmaceutical and diagnostic company. The firm's best-selling pharmaceutical products include a variety of oncology therapies from acquired partner Genentech, and its diagnostics group has been bolstered by the acquisition of Ventana in 2008. Oncology products account for more than 60% of pharmaceutical sales, and professional diagnostics for more than half of diagnostic-related sales.

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Morningstar Analysis

Valuation, Growth and Profitability 05 Apr 2017

Our fair value estimate for Roche's nonvoting equity securities stands at $42.50 per ADR.

We think Roche's pharmaceutical division will see a 6% top-line compound annual growth rate through 2021. We assume 2% average annual declines from combined sales of Rituxan and Gazyva, as Rituxan biosimilars and new oral competitors in the blood cancer space should be partly countered by Gazyva's superiority to Rituxan in CLL and indolent/maintenance NHL indications. We expect relatively flat global Avastin sales until 2019, due to strong PD-1 competition and biosimilar competition. For Roche's PD-L1 program, we see Tecentriq sales reaching CHF 6 billion by 2021. After a strong 210-basis-point margin improvement in 2012 due to Roche's operational excellence plan, margin expansion slowed in 2013 and turned negative in 2014 and 2015; we expect the pharmaceutical operating margin to hover in the low 40s for the remainder of our explicit forecast period. In diagnostics, we see operating margins improving to the low-20s on product mix and efficiency gains.

We assume a 7.2% cost of capital for Roche. We still rate the systematic risk surrounding Roche shares as below average and assume a cost of equity of 7.5%, which we believe aligns our capital cost assumptions with the returns that equity investors are likely to demand over the long run. We also assume a 4.5% pretax cost of debt to reflect a more normalized long-term rate environment. The Swiss franc strengthened as a result of the Swiss central bank ending its cap on its currency in early 2015 but has since weakened against the U.S. dollar, and we currently use an exchange rate of CHF 1 for each U.S. dollar.

Scenario Analysis

Given the relatively inelastic demand for Roche's diverse portfolio of leading cancer therapies and diagnostics, we rate the uncertainty surrounding Roche shares as low. Our $42.50 fair value estimate incorporates operating margins nearing 40% over the next 10 years, as we expect to see slightly improved ratios for marketing expenses over the next 10 years (partly due to cost-savings plans and continued focus on specialty markets). However, given low-single-digit top-line growth and pressure from biosimilars, we think R&D and costs of goods sold will be relatively flat as a percentage of sales. We estimate five-year revenue growth of 6% and earnings growth of 8%.

In our bear-case scenario, we assume greater competition from biosimilars and branded drugs as well as government pricing pressure in the long run, pushing pharmaceutical cost of goods sold up over the next 10 years. We model selling, general, and administrative costs in this scenario at a steady percentage of sales, as less differentiated products require heavier marketing, and an increase in R&D, incorporating a tougher regulatory environment and less benefit from the firm's personalized medicine strategy. This results in a five-year earnings-growth rate of 6%, a $35 fair value estimate, and overall operating margin declines from 36% to 33% over 10 years.

In our bull-case scenario, we assume that Roche maintains strong pricing power and sees better-than-expected manufacturing efficiencies with novel biologics, leading to slight improvement in pharmaceutical gross margins during the next 10 years. In addition, we model R&D expenses improving over the next 10 years, as biomarker-fueled development allows for smaller and fewer preapproval clinical trials. Our bull case also assumes that Roche garners above-market diagnostics growth during the next 10 years. These assumptions result in a five-year earnings-growth rate of 12% and a fair value estimate of $53 per share.

Economic Moat

Roche's wide moat arises from its status as the leader in oncology therapeutics (30% market share) as well as in vitro diagnostics (20% share), and the firm has a promising

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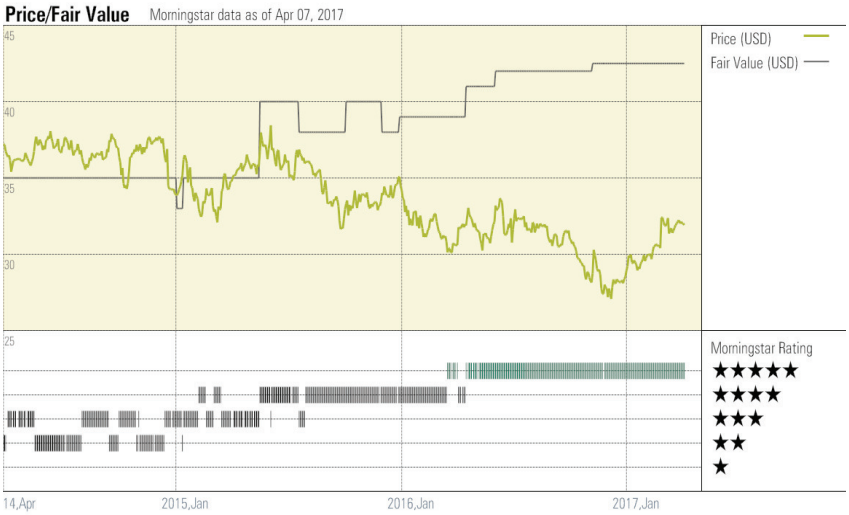

strategy of combining its expertise in both areas to generate a growing personalized medicine pipeline, making use of companion diagnostics. Much of Roche's moat in pharmaceuticals is derived from its long relationship with Genentech. Roche first acquired a controlling interest in Genentech in 1990 and owned almost 56% of the firm before Genentech's board accepted its $95 per share offer to acquire a full interest in 2009. Genentech's portfolio of blockbuster cancer biologics--which includes Avastin, Rituxan, and Herceptin--continues to grow. Genentech's commercial structure in the United States complemented Roche's international operations, and Roche also secured rights to Genentech's pipeline in the process, as its option to in-license drug candidates from Genentech was set to expire in 2015.

Roche's Herceptin was one of the original personalized therapies, and breast and gastric cancer patients who are HER2+ continue to see strong survival benefits from this antibody therapy. Since then, Roche has established a record of developing and launching personalized medicine therapies and companion diagnostics in oncology, including Tarceva in EGFR-mutant patients, Kadcyla and Perjeta for HER2+ patients, and melanoma drug Zelboraf for BRAF mutation patients. Zelboraf was the first product developed using a companion diagnostic from the start of clinical trials, and pairing drugs with diagnostics early in development shortens development timelines, reduces up-front investment, and boosts the likelihood of a meaningful benefit to patients. We think this will allow Roche to justify high price tags globally for future personalized therapies despite global pricing pressure and budget constraints.

Three fourths of Roche's pharmaceutical sales are from biologics; biosimilars are only beginning to penetrate the European market, and the first biosimilar (Novartis' biosimilar version of Amgen's Neupogen) was recently approved in the U.S. Biologics can be difficult to characterize, and structural instability under certain conditions and the potential for immunogenicity (immune system reactions to the drugs) are concerns. Therefore, biologics are associated with significantly higher costs of manufacturing, clinical trials, and marketing than traditional small-molecule therapies. Monoclonal antibodies like Roche's blockbuster oncology therapies Rituxan, Avastin, and Herceptin could be more difficult to replicate without causing higher immunogenicity. In addition, biologics for chronic indications such as rheumatoid arthritis could require more safety data to secure regulatory approval or physician acceptance. For example, we have seen delays and discontinuations with Rituxan biosimilar programs, and we believe hurdles for this product could be higher, owing to maintenance use in non-Hodgkin's lymphoma as well as chronic use in rheumatoid arthritis. Despite the fact that patents in Europe expired in 2013, Roche does not expect to see biosimilars reach this market until 2017.

Moat Trend

We think Roche's wide moat is stable. While we do expect biosimilars to eventually erode sales of Roche's top drugs, we think the firm is doing an excellent job of extending its franchises. Roughly 90% of operating profits stem from

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Roche's pharmaceutical division, as cancer biologic therapies Rituxan, Herceptin, and Avastin continue to expand their approved indications and geographic reach. While these products may be approaching peak penetration of some markets--and biosimilars for Rituxan could launch as soon as 2017 in some markets--new indications, new formulations, and next-generation products should help shield long-term oncology growth prospects.

Herceptin and Rituxan are seeing longer duration of therapy, as more patients undergo maintenance therapy or use these products as part of more effective combination regimens. In addition, Avastin is seeing growth in ovarian cancer sales in Europe and also as a maintenance therapy in colorectal cancer in the U.S. and Europe.

A more convenient, subcutaneous Herceptin was approved in Europe in 2013, and subcutaneous Rituxan in 2014 (well in advance of biosimilar competition). These products involve less time at the hospital, saving patients time and lowering overall hospital costs. We also think a subcutaneous version of Actemra (approved in the U.S. in 2013) will allow the drug to compete head-to-head with products like Enbrel and Humira, given that 70% of the global rheumatoid arthritis market is administered in this fashion.

Patents on newly approved drugs Perjeta and Kadcyla run to 2025 and 2023, extending the profitability of the firm's Herceptin-based breast cancer franchise. Gazyva, an innovative next-generation antibody that improves on Rituxan's strong efficacy in CLL and the broadest portion of NHL, was approved in late 2013. Earlier in the pipeline, Roche's antibody-drug conjugate polatuzumab vedotin and Bcl-2 inhibitor Venclexta (partnered with AbbVie) are also in testing in combination with Rituxan, which could prevent Rituxan biosimilars from eroding the firm's moat in hematological oncology. Roughly 60% of Roche's late-stage pipeline is tied to a companion diagnostic, typically from the firm's molecular or tissue diagnostic segments. Roche's novel PD-L1 antibody, Tecentriq, is becoming key to the firm's overall pipeline and should become the cornerstone of an emerging cancer immunotherapy pipeline. Recently approved in bladder and lung cancer, Tecentriq will produce additional combination data in lung cancer from several trials throughout 2017-2018. While there is controversy over the definition of PD-L1 positivity across the industry, and Opdivo and Keytruda trials have different designs and diagnostics, we still think Roche's diagnostic could be valuable in determining whether or not patients require costly combination treatment.

Beyond oncology, Roche has had mixed results, but we still see significant potential from select programs. While a targeted late-stage trial recently failed in Alzheimer's (the gantenerumab trial was filtered for patients with prodromal disease using cerebrospinal fluid tau/amyloid-beta levels), Roche could opt to pursue additional studies with one of its Alzheimer's antibody programs, if new analysis in 2017 is positive. We are encouraged by biomarker-driven late-stage studies for etrolizumab (ulcerative colitis) and lampalizumab (geographic atrophy), which entered phase 3 in 2014. Innovative hemophilia therapy emicizumab entered phase 3 in 2015, as well, and could launch as early as 2017.

Sales in Roche's diagnostics arm have been hit by pricing headwinds in the U.S. and Asia in the competitive diabetes-care market, putting pressure on Roche to develop a strategy to retain profits and market share. However, Roche continues to dominate the professional diagnostics market, and strong double-digit immunoassay growth is a tribute to the firm's installed base of testing platforms. A new cobas 8100 platform launched in Europe in 2013 promises to make testing even more automated. We also think the firm should see continued strong performance in molecular and tissue diagnostics, particularly as it applies

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Morningstar Analysis

its diagnostics expertise to the development of personalized medicine in oncology and beyond.

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Bulls Say/Bears Say

Bulls Say

- Roche's biologics constitute three fourths of its pharmaceutical sales, making the firm the biggest biotech in the world. Biosimilar competitors have seen development setbacks, and Roche's innovative pipeline could make these products less relevant by their launch.
- Herceptin and Rituxan are seeing growth from expanded approvals and emerging-markets penetration, and several innovative drugs are progressing through clinical trials.
- Collaboration between its diagnostics and drug-development groups gives Roche a unique in-house angle on personalized medicine.

Bears Say

- Three fourths of Roche's drug sales are from Genentech. Roche needs to expand prescribing labels and develop next-generation drugs to continue to grow sales.
- Roche relies on three cancer drugs--Rituxan, Avastin, and Herceptin--to provide 40% of revenue. If tighter budgets lead to pricing pressure on expensive cancer drugs in the U.S., Roche's profits could be vulnerable.
- The failure of diabetes drugs taspoglutide and aleglitazar, cholesterol drug dalcetrapib, and schizophrenia drug bitopertin raises the question of whether Roche can successfully develop drugs outside of cancer.

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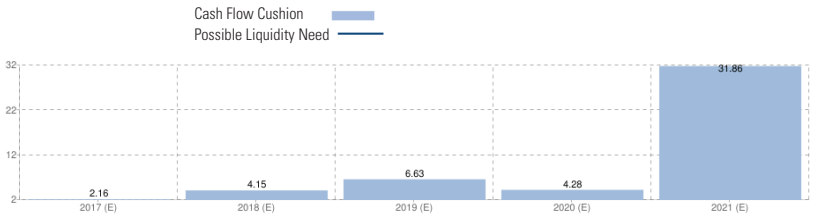
Five Year Adjusted Cash Flow Forecast (CHF Mil)

	2017(E)	2018(E)	2019(E)	2020(E)	2021(E)
Cash and Equivalents (beginning of period)	9,107	11,099	13,564	17,938	19,566
Adjusted Available Cash Flow	5,982	6,632	7,502	7,706	8,046
Total Cash Available before Debt Service	15,089	17,731	21,066	25,644	27,612
Principal Payments	-5,363	-2,627	-1,690	-4,998	—
Interest Payments	-590	-562	-342	-342	-181
Other Cash Obligations and Commitments	-1,022	-1,084	-1,146	-656	-685
Total Cash Obligations and Commitments	-6,975	-4,273	-3,178	-5,996	-867

Cumulative Annual Cash Flow Cushion



Adjusted Cash Flow Summary

	CHF Millions	% of Commitments
Beginning Cash Balance	9,107	42.8
Sum of 5-Year Adjusted Free Cash Flow	35,867	168.5
Sum of Cash and 5-Year Cash Generation	44,974	211.3
Revolver Availability	4,666	21.9
Asset Adjusted Borrowings (Repayment)	—	—
Sum of Cash, 5-Year Cash Generation, Revolver and Adjustments	49,640	233.2
Sum of 5-Year Cash Commitments	-21,289	—

Financial Health

Roche's financial health remains robust. At the end of 2016, Roche owed CHF 23 billion in debt and held cash and marketable securities of CHF 9 billion, or net debt leverage of less than 1.0 times 2016 adjusted EBITDA. Debt maturities are spread over the next several years, and we expect the firm will meet these obligations easily, given our estimates for free cash flows north of CHF 14 billion annually, on average, over the next five years. We expect Roche to maintain a dividend payout ratio north of 50% going forward implying mid-single-digit annually increases in dividends per share.

Enterprise Risk

Roche will continue to rely on innovation and key acquisitions to maintain growth. While patent portfolios for Roche's top drugs generally extend for the next several years, and potential biosimilar competitors have seen setbacks, the firm will be experiencing pressure on several significant drugs in the interim. Blockbuster eye disease drug Lucentis is witnessing intense competition from Regeneron's Eylea, and Lucentis will not continue to serve as the growth driver it has been for the past several years. Boniva and NeoRecormon have succumbed to competition following patent expirations, Pegasys is declining as all-oral hepatitis therapies come to market, and other drugs are in the process of going generic, including Valcyte and Xeloda. Roche has had several high-profile pipeline failures in recent years--including diabetes candidates taspoglutide and aleglitazar, cholesterol drug dalcetrapib, and schizophrenia drug bitopertin--and it may continue to struggle to diversify outside its strong foundation in cancer biologics. If monoclonal antibody biosimilars are quickly approved and accepted by insurers, physicians, and patients, Roche could experience top-line pressure as key products Rituxan, Avastin, and Herceptin go generic. Slightly more than 50% of Roche's U.S. sales are government paid, as its oncology antibodies are most often paid for through Medicare Part

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B. We have seen recent proposals for lowering reimbursement further for Part B drugs, and we think some of Roche's high-priced cancer therapies could be vulnerable to pricing pressure in the U.S. in the long run through private payers as well, as competition increases.

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Management & Ownership

Management Activity

Name	Position	Shares Held	Report Date*	InsiderActivity
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 Stock Fund	0.46	1.44	—	31 Dec 2016
Dodge & Cox Balanced Fund	0.08	1.03	-60	31 Dec 2016
VA CollegeAmerica Washington Mutual	0.07	0.17	—	31 Dec 2016
Principal Equity Income Fund	0.05	1.75	—	28 Feb 2017
Mairs & Power Growth Fund	0.05	2.19	190	31 Dec 2016
Concentrated Holders				
BBVA Europa	—	9.13	—	28 Feb 2017
Shelton European Growth & Income Fund	—	4.97	—	28 Feb 2017
Dreyfus Worldwide Growth Fund	0.01	4.54	-12	28 Feb 2017
Transamerica Torray Concntr Gr VP	—	3.53	—	28 Feb 2017
Transamerica Concentrated Growth Fund	—	3.48	-8	28 Feb 2017

Institutional Transactions

Top 5 Buyers	% of Shares Held	% of Fund Assets	Shares Bought/ Sold (k)	Portfolio Date
Mairs & Power Inc	0.07	1.83	338	31 Dec 2016
Truffle Asset Management	—	1.66	280	31 Dec 2016
Parametric Portfolio Associates LLC	0.04	0.11	210	31 Dec 2016
UBS Asset Mgmt Americas Inc	—	0.01	134	31 Dec 2016
Teachers Retirement System Of The State Of Kentucky	—	0.03	95	31 Dec 2016
Top 5 Sellers				
Williams Jones & Associates Inc	—	0.22	-848	31 Dec 2016
Capital Counsel LLC	0.02	3.02	-761	31 Dec 2016
Schafer Cullen Capital Management Inc	0.03	0.83	-367	31 Dec 2016
Goldman Sachs Asset Management LP	0.04	2.85	-210	31 Dec 2016
Silvercrest Asset Management Group LLC	—	0.01	-93	31 Dec 2016

Management 05 Apr 2017

Although we think Roche's governance has been good, vague compensation standards and a separate class of voting shares prevent the firm from surpassing a Standard stewardship rating. Franz Humer stepped down from his position as CEO in March 2008 after 10 years in the top spot; Lufthansa CEO and Roche board member Christoph Franz replaced Humer as board chairman in 2014. Current CEO Severin Schwan--former head of the firm's diagnostics unit--has been instrumental in the acquisitions of Ventana and Genentech. Overall, we think Schwan has done an excellent job of juggling the often competing demands of investing in the pipeline, paying down debt, and increasing the firm's dividend.

We're pleased to see that Genentech's management continued in leadership roles after the acquisition, but we've seen more attrition since. For example, Genentech CEO and chairman Arthur Levinson was chairman of Genentech's board during the integration process and joined Roche's board of directors in 2010; he stepped down in 2014 due to conflicts of interest with his new age-related disease venture, Calico (former Roche chief medical officer Hal Barron also moved to Calico in 2013). Genentech research and early development remains an autonomous unit within Roche; Michael Varney now heads this unit (former chief scientific officer of Genentech Richard Scheller stepped down at the end of 2014) and reports directly to Schwan. We think this separation of Genentech's research engine from Roche will continue to help the firm retain top talent, but we also think Roche's own discovery and development efforts (led by John Reed) are beginning to improve. However, Roche's nonvoting shares--the vast majority of shares available on the market--don't offer investors a say in how the firm is run. A shareholder group with pooled voting rights--including board members Andre Hoffmann and Andreas Oeri--owns 45% of voting shares, and Novartis owns 33% of voting shares.

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Analyst Notes

Roche Remains Undervalued Following Strong Data in Key Breast Cancer Trial 02 Mar 2017

Following strong data for the combination of Herceptin and Perjeta in a key breast cancer study (the Aphinity study), we're maintaining our Roche valuation of CHF 333 per share/ $42.50 per ADR, and the stock continues to look undervalued. Roche still faces the launch of biosimilar Rituxan (and perhaps Herceptin) in Europe later this year, and we are more bearish than consensus on Rituxan's potential. However, we have been more bullish on the outcome of the Aphinity study, as well as the launches of Tecentriq, Ocrevus, and emicizumab, and we think Roche will be able to grow at the high end of its 2017 guidance. Roche's innovative oncology pipeline and diagnostics expertise support a stable, wide moat.

We think Roche's pricing power in the HER2-positive breast cancer market is strengthened by the Aphinity data, which showed superior disease-free survival in early-stage breast cancer patients with the combination of Perjeta, Herceptin, and chemotherapy, versus Herceptin and chemotherapy alone. This is a high bar, as at least two thirds of early breast cancer patients achieve cures with the Herceptin regimen, but previous strong data for the combination in the neoadjuvant setting (prior to surgery) supported our view. We think Herceptin biosimilars will have a difficult time penetrating the market, as Roche is likely to bundle these therapies, particularly now that the combination has shown superior data across the spectrum of disease staging.

The Aphinity data fits with our thesis that Roche's innovative cancer portfolio will help the firm maintain strong pricing power in oncology despite biosimilars to its oldest, most established therapies. Most of Roche's cancer drugs are covered as medical benefits in the U.S., and payers have few mechanisms to control prices, particularly for differentiated therapies. For more information on our outlook for U.S.-branded drug pricing power in oncology, as well as other therapeutic areas, please see our Healthcare Observer "Despite PBM Scrutiny, Differentiated Drugs Provide Stocks with Underappreciated U.S. Pricing Power."

While the Aphinity data and Tecentriq data with Avastin and chemotherapy are the biggest catalysts in our model for 2017, Roche could also launch two new therapies--Ocrevus in multiple sclerosis (late March PDUFA) and emicizumab in hemophilia patients with inhibitors. We also remain bullish on several additional phase 3 trials scheduled to read out this year, including Venclexta and Rituxan in CLL, emicizumab in the broader hemophilia A population, Alecensa versus Xalkori in first-line ALK-positive lung, and lampalizumab in geographic atrophy. Phase 3 Tecentriq data in first-line lung cancer, in combination with chemotherapy and Avastin, should come in the third quarter. We also expect phase 3 data from several Tecentriq combination regimens in 2017 to give investors a clearer idea of where Roche will be able to differentiate from Bristol and Merck. For a complete review of Roche's pipeline and patent exposure, please see our Healthcare Observer "Strong Pipelines Support Big Biotech and Big Pharma Moats and Attractive Valuations."

Roche Faces Biosimilar Headwind in 2017, but We're Bullish on Tecentriq Launch and Key Data 01 Feb 2017

Roche saw solid 4% top-line growth in 2016 (3% pharmaceuticals; 7% diagnostics) on a constant currency basis, and core EPS growth of 5%, which was slightly below our full-year expectations, but we're maintaining our valuation of CHF 333 per share/$42.50 per ADR, and the stock continues to look undervalued. Management gave guidance for low- to mid-single-digit sales and core EPS growth in 2017, taking into account pressure from generic Tamiflu and the launch of biosimilar Rituxan (and perhaps Herceptin) in Europe. Guidance also factors in uncertainty around upcoming data for the Aphinity study of Herceptin and Perjeta, as well as the upcoming positive launches of MS drug Ocrevus (end of March PDUFA) and hemophilia

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Analyst Notes

drug emicizumab (filing in the United States). While we more bearish than consensus on Roche's Herceptin and Rituxan potential going forward, we are more bullish on the outcome of the Aphinity study as well as the launches of Tecentriq, Ocrevus, and emicizumab, and we think Roche will be able to grow at the high end of its guidance. We think Roche's innovative oncology pipeline and diagnostics expertise support a stable, wide moat.

Roche faces biosimilar pressure in Europe this year on its Rituxan franchise (from Celltrion and Novartis), and possibly its Herceptin franchise (from Celltrion, Mylan/Biocon, and Merck), and we model a 12% global sales decline for the drug. Growth of Gazyva should partly counter this, particularly once it is approved in first-line lymphoma, and we model a 5% decline in sales of Rituxan/Gazyva combined in 2017. Roche's ability to counter Herceptin pricing pressure will partly rest on its ability to achieve superior disease-free survival in early-stage breast cancer patients with the combination of Perjeta and Herceptin in the Aphinity study, which will have data this quarter. If data are positive, we think Herceptin biosimilars will have a difficult time penetrating the market, as Roche is likely to bundle these therapies.

In the evolving lung cancer market, Avastin is already taking a hit in the U.S. as a new immuno-oncology option (Merck's Keytruda) steals share in the first-line setting. However, Roche's immuno-oncology drug Tecentriq was approved in second-line lung cancer in the U.S. in the October, and is stealing market share from Bristol's Opdivo. We expect Tecentriq sales to grow in 2017 based on expanded first-line bladder cancer use and the launch in second-line lung, but investors are clearly anticipating the first glimpse of Phase 3 data in first-line lung cancer in combination with chemotherapy and Avastin, with a readout expected in the third quarter. Phase 2 data for Tecentriq and Avastin in renal cancer is expected to be presented later this month, which could give some more information on the synergy between these two drugs. We also expect Phase I data from several Tecentriq combination regimens in 2017 to give investors a clearer idea of where Roche will be able to differentiate from Bristol and Merck.

While the Aphinity data and Tecentriq data with Avastin and chemotherapy are the biggest catalysts in our model for 2017, we also remain bullish several additional Phase 3 trials scheduled to read out this year, including Venclexta and Rituxan in CLL, emicizumab in the broader hemophilia A population, Alecensa versus Xalkori in first-line ALK-positive lung, and lampalizumab in geographic atrophy. For a complete review of Roche's pipeline and patent exposure, please see our Healthcare Observer "Strong Pipelines Support Big Biotech and Big Pharma Moats and Attractive Valuations."

U.S. Elections Add Uncertainty to Healthcare Stocks, but Unlikely to Cause Major Fair Value Changes 09 Nov 2016
The presidential election of Donald Trump combined with the Republicans retaining majorities in Congress leads to greater uncertainty for healthcare stocks. While Trump and the Republicans have been clear on the desire to repeal the Affordable Care Act (ACA), there is less clarity on their healthcare policies, except for the focus on reducing regulations. We suspect as plans take shape to repeal the ACA, the likely outcome will be more of a modification than a complete repeal as several groups have benefited from the legislation.

If the ACA were repealed, the outcome will likely mean a lower demand for healthcare combined with less industry fees and profit restrictions. The passage of ACA was largely a compromise with industry stakeholders, mandating increased insurance coverage in return for lower costs. Reversing this mandate is largely a net neutral to the healthcare sector, with the drug, biotech, and insurance

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Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

Analyst Notes

industries slightly benefiting, hospitals and drug supply chain firms negatively impacted, and the remaining industries less influenced.

On stock valuations, a repeal of the ACA would create some changes to healthcare fair values, but without clarity on the Republican plans, we have not made any changes to our fair value estimates. The drug industry would likely lose some volume gains as the close to 20 million newly insured patients from the ACA will likely lose some insurance coverage and spend less, but the mandated costs of ACA would likely more than offset the lost revenue. Similarly, for managed care organizations, the increased profitability without ACA restrictions would likely more than offset lost volumes. However, hospitals would face challenges due to the likely reversal of the declines in uncompensated care and higher volumes from the newly insured patients. Also, drug supply chain firms from Pharmacy Benefit Managers to drug distributors would face headwinds due to the lost benefit of drug demands from the newly insured patients.

Maintaining Our Fair Value for Roche; Cancer and Immunology Pipeline Outweighs Biosimilar Threat 20 Oct 2016

Roche's 3% top-line growth in the third quarter was weighed down by weaker 2% pharmaceutical sales growth (reserves for the U.S. 340B program impacting Avastin, Rituxan, and Herceptin), but strong 8% growth in diagnostics helped offset the impact, and we're maintaining our fair value estimate as our long-term thesis remains intact. Shares look significantly undervalued at recent prices, and we still forecast core EPS growth ahead of sales growth for the full year (in line with management's forecast). Tecentriq's launch ramp and data from the Aphinity study in breast cancer (first quarter of 2017) look like the biggest upcoming catalysts, but we also see the early 2017 launch of Ocrevus ($4 billion potential in multiple sclerosis) and late 2017 potential launch of hemophilia drug emicizumab (at least $2 billion potential, with phase 3 data coming later this quarter) as strong pipeline drivers. Given a strong portfolio and pipeline, as well as diversification as the global leader in diagnostics, Roche's wide moat remains strong ahead of biosimilar competition.

While biosimilar threats to Herceptin in Europe are advancing (we expect as many as four products could launch in Europe by the end of 2017), we think data for Herceptin and Perjeta in the adjuvant setting from the Aphinity study will continue to differentiate this combination regimen, and Roche is likely to coformulate these therapies to mitigate biosimilar threats. HER2 growth has been the biggest driver this year, with 9% HER2 growth year to date from Herceptin, Perjeta, and Kadcyla. Year-to-date growth for Rituxan (3%) and Avastin (1%) has been lackluster; we think Avastin sales in lung cancer (15% of sales) will continue to be hit by competition from new immuno-oncology therapies, and Rituxan is poised to see two biosimilar entrants by the end of 2017 in Europe. In diagnostics, professional and immunodiagnostics continue to drive outperformance, but diabetes care sees continued U.S. reimbursement pressure.

As we discussed in our Healthcare Observer "The Biosimilar Market: Underappreciated Pressure on Moats Must Be Countered by Pipelines," Roche's complex cancer biologics are a tougher target for biosimilar makers, and we think subcutaneous forms of Rituxan and Herceptin (already with more than 30% market share in launched countries in Europe) and innovative new therapies (including Perjeta, Gazyva, and Tecentriq) will help defend growth prospects. However, biosimilar threats are weighing on Roche's growth prospects, with approval for two biosimilar versions of Rituxan (Celltrion, Novartis) and potentially four versions of Herceptin (Mylan/Biocon, Celltrion, Samsung, and Amgen) by the end of 2017, and we expect both of these therapies to see annual declines between 10-15% beginning in 2017.

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

To combat biosimilar pressure, we think Roche's next-generation CD20 antibody Gazyva will see strong long-term potential in leukemia and indolent lymphoma settings, replacing the majority of Rituxan sales, and that Roche's own immuno-oncology therapy, Tecentriq, will grow to CHF 5 billion in sales by 2020. We think Tecentriq's first-to-market status in bladder cancer and all-comer approval in second-line lung cancer will drive near-term sales, and that combination data with Avastin (phase 2 data in kidney cancer in early 2017), Avastin and chemo (Phase 3 data second half of 2017), and novel regimens (early-stage data 2017) will support long-term sales. Immunology has become increasingly important in driving Roche's growth, and we expect continued double-digit growth for Esbriet (IPF), Actemra (RA), and Xolair (asthma and hives).

Despite Poor Lung Cancer Data, Bristol's Opdivo Still Well Positioned in Immuno-Oncology 10 Oct 2016

Bristol released new Opdivo data at the European Society of Medical Oncology, or ESMO, annual meeting, which will likely lead to lost ground in the largest immuno-oncology indication of first-line non-small cell lung cancer, but Opdivo remains in a solid position with several other cancer indications, and we don't expect any major changes to our $71 fair value estimate. Further, while Merck's Keytruda benefits from the Opdivo setback, we had already forecast robust Keytruda sales, and we don't expect any significant changes to our Merck fair value estimate of $65. Additionally, both Bristol and Merck, along with Roche and AstraZeneca, are well positioned to reinforce their economic moats with transformative new immuno-oncology drugs, which collectively should post peak sales of over $35 billion annually across all indications.

At ESMO, Bristol reported detailed Opdivo data from the Checkmate 026 study, which had already been disclosed in August as a failure in first-line non-small cell lung cancer in patients with PD-L1 expression of 5% or greater. Importantly, Opdivo didn't show a progression-free survival benefit in patients with PD-L1 expression at 50% or greater, an area where Merck's Keytruda did show a benefit. Therefore, we do not believe that Opdivo monotherapy will take much market share in this important indication. However, we had already expected combination therapy would be key in this indication, and Bristol's Yervoy offers a solid combination drug for Opdivo to improve results. Further, we don't think Opdivo is an inferior drug to Keytruda, as data from most other studies indicate the two drugs are fairly comparable.

Beyond first-line non-small cell lung cancer, Opdivo remains on solid footing for several other indications that represent over 50% of the immuno-oncology market potential.

In particular, first-mover advantages and strong data in small cell lung cancer, glioblastoma, and liver cancer should drive further growth. Continued leadership in melanoma, renal cancer, and second-line non-small cell lung cancer should also drive sales, and these indications are relatively new in several major developed counties.

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

Financial Summary and Forecasts

Fiscal Year Ends in December

Growth (% YoY)	3-Year Hist. CAGR	2014	2015	2016	Forecast 2017	Forecast 2018	5-Year Proj. CAGR
Revenue	*2.6*	1.5	1.4	5.1	*5.5*	*7.0*	*6.1*
EBIT	*1.0*	-1.5	-0.5	5.0	*5.1*	*8.4*	*6.5*
EBITDA	*0.5*	-3.6	-0.2	5.5	*4.5*	*8.3*	*6.3*
Net Income	*0.5*	0.1	-5.7	7.6	*9.0*	*9.8*	*8.4*
Diluted EPS	*0.6*	0.1	-5.6	7.8	*8.8*	*9.8*	*8.4*
Earnings Before Interest, after Tax	*-3.7*	-13.4	-6.7	10.5	*2.7*	*9.2*	*6.5*
Free Cash Flow	*-13.4*	-72.9	160.6	-8.0	*12.8*	*10.5*	*9.6*

Profitability	3-Year Hist. Avg	2014	2015	2016	2017	2018	5-Year Proj. Avg
Operating Margin %	*36.7*	37.2	36.4	36.4	*36.3*	*36.8*	*37.0*
EBITDA Margin %	*40.8*	41.2	40.5	40.7	*40.3*	*40.8*	*41.0*
Net Margin %	*25.0*	26.0	24.2	24.7	*25.6*	*26.2*	*26.8*
Free Cash Flow Margin %	*18.2*	9.4	24.1	21.1	*22.5*	*23.3*	*24.0*
ROIC %	*18.5*	20.0	17.8	17.8	*18.1*	*19.0*	*19.7*
Adjusted ROIC %	*16.5*	18.1	15.8	15.7	*16.1*	*17.0*	*17.6*
Return on Assets %	*16.6*	17.9	15.4	16.4	*17.3*	*17.9*	*18.1*
Return on Equity %	*58.8*	63.4	57.3	55.7	*50.1*	*43.9*	*40.2*

Leverage	3-Year Hist. Avg	2014	2015	2016	2017	2018	5-Year Proj. Avg
Debt/Capital	*0.53*	0.57	0.53	0.48	*0.39*	*0.31*	*0.25*
Total Debt/EBITDA	*1.20*	1.32	1.19	1.09	*0.92*	*0.74*	*0.61*
EBITDA/Interest Expense	*24.52*	21.12	22.53	29.91	*36.45*	*41.43*	*76.52*

Valuation Summary and Forecasts

	2015	2016	2017(E)	2018(E)
Price/Fair Value	0.88	0.67	—	—
Price/Earnings	20.4	15.7	*16.1*	*14.7*
EV/EBITDA	13.0	10.5	*10.8*	*10.0*
EV/EBIT	14.4	11.7	*12.0*	*11.0*
Free Cash Flow Yield %	5.0	5.5	*5.4*	*6.0*
Dividend Yield %	2.9	3.5	*3.2*	*3.6*

Key Valuation Drivers

Cost of Equity %	7.5
Pre-Tax Cost of Debt %	4.5
Weighted Average Cost of Capital %	7.2
Long-Run Tax Rate %	22.0
Stage II EBI Growth Rate %	4.7
Stage II Investment Rate %	24.7
Perpetuity Year	20

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

Discounted Cash Flow Valuation

	CHF Mil	Firm Value (%)	Per Share Value
Present Value Stage I	113,610	37.0	131.80
Present Value Stage II	71,070	23.1	82.45
Present Value Stage III	122,617	39.9	142.25
Total Firm Value	**307,297**	**100.0**	**356.49**
Cash and Equivalents	9,107	—	10.57
Debt	-22,355	—	-25.93
Preferred Stock	—	—	—
Other Adjustments	-5,533	—	-6.42
Equity Value	**288,516**	**—**	**334.71**
Projected Diluted Shares	862		
Fair Value per Share (USD)	**42.50**		

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.

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Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

Morningstar Analyst Forecasts

Income Statement (CHF Mil)

Fiscal Year Ends in December

	2014	2015	2016	*Forecast* 2017	*Forecast* 2018
Revenue	**47,462**	**48,145**	**50,576**	***53,354***	***57,091***
Cost of Goods Sold	12,341	12,706	13,469	*14,097*	*14,898*
Gross Profit	**35,121**	**35,439**	**37,107**	***39,257***	***42,193***
Selling, General & Administrative Expenses	10,976	10,823	10,832	*11,416*	*12,025*
Research & Development	8,913	9,332	9,915	*10,249*	*10,852*
Other Operating Expense (Income)	-2,404	-2,258	-2,060	*-1,773*	*-1,682*
Depreciation & Amortization (if reported separately)	—	—	—	—	—
Operating Income (ex charges)	**17,636**	**17,542**	**18,420**	***19,365***	***20,998***
Restructuring & Other Cash Charges	—	—	—	—	—
Impairment Charges (if reported separately)	—	—	—	—	—
Other Non-Cash (Income)/Charges	—	—	—	—	—
Operating Income (incl charges)	**17,636**	**17,542**	**18,420**	***19,365***	***20,998***
Interest Expense	926	866	688	*590*	*562*
Interest Income	-190	-550	-309	*-309*	*-309*
Pre-Tax Income	**16,520**	**16,126**	**17,423**	***18,466***	***20,127***
Income Tax Expense	3,987	4,289	4,735	*4,617*	*4,931*
Other After-Tax Cash Gains (Losses)	—	—	—	—	—
Other After-Tax Non-Cash Gains (Losses)	—	—	—	—	—
(Minority Interest)	-204	-211	-182	*-213*	*-228*
(Preferred Dividends)	—	—	—	—	—
Net Income	**12,329**	**11,626**	**12,506**	***13,636***	***14,968***
Weighted Average Diluted Shares Outstanding	863	862	860	*862*	*862*
Diluted Earnings Per Share	**14.29**	**13.49**	**14.54**	***15.82***	***17.36***
Adjusted Net Income	12,329	11,626	12,506	*13,636*	*14,968*
Diluted Earnings Per Share (Adjusted)	**14.29**	**13.49**	**14.54**	***15.82***	***17.36***
Dividends Per Common Share	0.97	1.00	1.01	*1.03*	*1.13*
EBITDA	**19,553**	**19,510**	**20,578**	***21,499***	***23,282***
Adjusted EBITDA	**19,553**	**19,510**	**20,578**	***21,499***	***23,282***

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Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

Morningstar Analyst Forecasts

Balance Sheet (CHF Mil)

Fiscal Year Ends in December	2014	2015	2016	Forecast 2017	Forecast 2018
Cash and Equivalents	11,703	9,171	9,107	*11,099*	*13,564*
Investments	—	—	—	—	—
Accounts Receivable	9,003	8,329	8,760	*9,241*	*9,888*
Inventory	7,743	7,648	7,928	*8,297*	*8,769*
Deferred Tax Assets (Current)	—	—	—	—	—
Other Short Term Assets	2,665	3,034	2,875	*2,875*	*2,875*
Current Assets	**31,114**	**28,182**	**28,670**	***31,512***	***35,097***
Net Property Plant, and Equipment	17,195	18,473	19,957	*21,558*	*22,985*
Goodwill	9,949	11,082	11,282	*11,282*	*11,282*
Other Intangibles	12,881	13,861	12,046	*12,046*	*12,046*
Deferred Tax Assets (Long-Term)	2,829	2,564	2,826	*2,826*	*2,826*
Other Long-Term Operating Assets	—	—	—	—	—
Long-Term Non-Operating Assets	1,673	1,601	2,038	*2,038*	*2,038*
Total Assets	**75,641**	**75,763**	**76,819**	***81,262***	***86,273***
Accounts Payable	2,883	3,207	3,375	*3,532*	*3,733*
Short-Term Debt	6,367	6,151	5,363	*2,627*	*1,690*
Deferred Tax Liabilities (Current)	—	—	—	—	—
Other Short-Term Liabilities	13,858	14,410	13,862	*13,862*	*13,862*
Current Liabilities	**23,108**	**23,768**	**22,600**	***20,021***	***19,285***
Long-Term Debt	19,347	17,100	16,992	*17,233*	*15,543*
Deferred Tax Liabilities (Long-Term)	605	545	838	*838*	*838*
Other Long-Term Operating Liabilities	251	505	532	*532*	*532*
Long-Term Non-Operating Liabilities	10,772	10,545	9,455	*9,455*	*9,455*
Total Liabilities	**54,083**	**52,463**	**50,417**	***48,079***	***45,653***
Preferred Stock	—	—	—	—	—
Common Stock	—	—	—	—	—
Additional Paid-in Capital	—	—	—	—	—
Retained Earnings (Deficit)	—	—	—	*6,568*	*13,777*
(Treasury Stock)	—	—	—	—	—
Other Equity	19,586	20,979	23,911	*23,911*	*23,911*
Shareholder's Equity	**19,586**	**20,979**	**23,911**	***30,479***	***37,688***
Minority Interest	1,972	2,321	2,491	*2,704*	*2,933*
Total Equity	**21,558**	**23,300**	**26,402**	***33,183***	***40,621***

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Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

Morningstar Analyst Forecasts

Cash Flow (CHF Mil)

Fiscal Year Ends in December	2014	2015	2016	Forecast 2017	Forecast 2018
Net Income	12,329	11,626	12,506	*13,636*	*14,968*
Depreciation	1,917	1,968	2,158	*2,134*	*2,284*
Amortization	—	—	—	—	—
Stock-Based Compensation	350	403	473	*498*	*525*
Impairment of Goodwill	—	—	—	—	—
Impairment of Other Intangibles	—	—	—	—	—
Deferred Taxes	—	—	—	—	—
Other Non-Cash Adjustments	315	-22	796	—	—
(Increase) Decrease in Accounts Receivable	-195	674	-431	*-481*	*-647*
(Increase) Decrease in Inventory	-1,837	95	-280	*-369*	*-472*
Change in Other Short-Term Assets	-150	-369	159	—	—
Increase (Decrease) in Accounts Payable	721	324	168	*157*	*201*
Change in Other Short-Term Liabilities	2,480	552	-548	—	—
Cash From Operations	**15,930**	**15,251**	**15,001**	***15,576***	***16,858***
(Capital Expenditures)	-2,966	-3,468	-4,144	*-3,735*	*-3,711*
Net (Acquisitions), Asset Sales, and Disposals	-9,937	-2,731	-924	—	—
Net Sales (Purchases) of Investments	—	—	—	—	—
Other Investing Cash Flows	899	1,923	555	—	—
Cash From Investing	**-12,004**	**-4,276**	**-4,513**	***-3,735***	***-3,711***
Common Stock Issuance (or Repurchase)	—	—	—	—	—
Common Stock (Dividends)	-6,617	-6,807	-6,909	*-7,068*	*-7,759*
Short-Term Debt Issuance (or Retirement)	—	—	—	*-2,736*	*-937*
Long-Term Debt Issuance (or Retirement)	5,211	-2,056	-1,414	*241*	*-1,690*
Other Financing Cash Flows	-2,558	-1,645	-1,748	*-285*	*-297*
Cash From Financing	**-3,964**	**-10,508**	**-10,071**	***-9,849***	***-10,682***
Exchange Rates, Discontinued Ops, etc. (net)	-220	-478	15	—	—
Net Change in Cash	**-258**	**-11**	**432**	***1,992***	***2,465***

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

		Price/Earnings			EV/EBITDA			Price/Free Cash Flow			Price/Book			Price/Sales		
Company/Ticker	Price/Fair Value	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)
Johnson & Johnson JNJ USA	1.16	17.1	17.5	16.7	12.3	11.7	11.3	20.2	20.5	17.7	4.5	4.5	4.4	4.4	4.5	4.3
Merck & Co Inc MRK USA	0.97	15.6	16.7	16.1	15.6	12.0	11.8	19.9	12.4	15.4	4.0	4.2	4.1	4.1	4.3	4.3
Amgen Inc AMGN USA	0.86	12.6	13.2	13.7	8.7	9.1	9.3	11.2	12.7	13.4	3.6	3.8	3.6	4.7	5.2	5.2
AbbVie Inc ABBV USA	0.90	12.9	12.0	10.8	12.0	10.7	9.9	15.2	19.9	11.1	21.5	16.0	11.2	3.9	3.8	3.5
Average		14.6	14.9	14.3	12.2	10.9	10.6	16.6	16.4	14.4	8.4	7.1	5.8	4.3	4.5	4.3
Roche Holding AG RHHBY US	**0.75**	**15.7**	***16.1***	***14.7***	**10.5**	***10.8***	***10.0***	**18.2**	***18.4***	***16.6***	**8.3**	***7.2***	***5.8***	**3.9**	***4.1***	***3.8***

Returns Analysis

		ROIC %			Adjusted ROIC %			Return on Equity %			Return on Assets %			Dividend Yield %		
Company/Ticker	Last Historical Year Total Assets (Mil)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)
Johnson & Johnson JNJ USA	141,208 USD	21.4	23.6	22.6	17.0	17.0	15.1	23.4	23.5	23.8	12.1	11.7	12.1	2.8	2.7	2.8
Merck & Co Inc MRK USA	95,377 USD	10.6	14.3	16.2	14.2	19.6	23.0	9.3	17.4	19.7	4.0	7.4	8.4	3.2	2.9	3.0
Amgen Inc AMGN USA	77,626 USD	27.3	29.0	28.7	19.4	20.5	20.2	26.7	26.4	23.7	10.4	10.4	9.6	2.8	2.9	3.2
AbbVie Inc ABBV USA	66,099 USD	22.2	22.1	22.7	34.6	33.2	33.2	138.8	125.9	109.1	10.0	10.7	13.0	3.7	3.5	3.8
Average		20.4	22.3	22.6	21.3	22.6	22.9	49.6	48.3	44.1	9.1	10.1	10.8	3.1	3.0	3.2
Roche Holding AG RHHBY US	**76,819** CHF	**17.8**	***18.1***	***19.0***	**15.7**	***16.1***	***17.0***	**55.7**	***50.1***	***43.9***	**16.4**	***17.3***	***17.9***	**3.5**	***3.2***	***3.6***

Growth Analysis

		Revenue Growth %			EBIT Growth %			EPS Growth %			Free Cash Flow Growth %			Dividend/Share Growth %		
Company/Ticker	Last Historical Year Revenue (Mil)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)	2016	2017(E)	2018(E)
Johnson & Johnson JNJ USA	71,890 USD	2.6	5.8	2.8	2.6	11.9	3.7	8.5	6.1	5.1	-36.5	-257.4	-206.4	6.8	6.1	5.1
Merck & Co Inc MRK USA	39,807 USD	0.8	0.5	1.0	-11.4	72.8	10.7	311.9	0.2	3.5	104.8	86.5	-20.5	2.1	0.2	3.5
Amgen Inc AMGN USA	22,991 USD	6.1	1.3	-1.3	15.6	5.9	-1.3	12.2	6.0	-3.7	19.1	1.1	-3.0	27.1	15.9	15.0
AbbVie Inc ABBV USA	25,638 USD	12.2	8.6	6.2	24.7	15.1	11.1	12.9	13.1	11.1	-139.4	258.2	73.4	—	13.1	10.0
Average		5.4	4.1	2.2	7.9	26.4	6.1	86.4	6.4	4.0	-13.0	22.1	-39.1	12.0	8.8	8.4
Roche Holding AG RHHBY US	**50,576** CHF	**5.1**	***5.5***	***7.0***	**5.0**	***5.1***	***8.4***	**7.8**	***8.8***	***9.8***	**-8.0**	***12.8***	***10.5***	**1.4**	***1.1***	***9.8***

Roche Holding AG RHHBY (PINX) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

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 %		
		2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*
Johnson & Johnson JNJ USA	18,764 USD	69.8	*69.3*	*70.3*	34.1	*36.4*	*36.5*	28.7	*30.4*	*30.6*	26.1	*25.9*	*25.9*	21.6	*21.7*	*24.4*
Merck & Co Inc MRK USA	10,538 USD	65.1	*76.0*	*76.1*	27.9	*38.3*	*38.6*	14.3	*24.5*	*26.9*	26.5	*26.2*	*26.6*	20.4	*35.0*	*27.8*
Amgen Inc AMGN USA	8,785 USD	81.9	*81.5*	*81.5*	52.5	*54.8*	*54.5*	42.6	*44.5*	*44.5*	38.2	*39.6*	*37.9*	41.8	*40.6*	*38.9*
AbbVie Inc ABBV USA	7,904 USD	77.3	*81.2*	*82.0*	42.0	*45.2*	*46.2*	37.4	*39.7*	*41.5*	30.8	*31.7*	*32.7*	25.6	*18.8*	*31.9*
Average		73.5	*77.0*	*77.5*	39.1	*43.7*	*44.0*	30.8	*34.8*	*35.9*	30.4	*30.9*	*30.8*	27.4	*29.0*	*30.8*
Roche Holding AG RHHBY US	**12,506** CHF	**73.4**	***73.6***	***73.9***	**40.7**	***40.3***	***40.8***	**36.4**	***36.3***	***36.8***	**24.7**	***25.6***	***26.2***	**21.5**	***22.2***	***23.0***

Leverage Analysis

Company/Ticker	Last Historical Year Total Debt (Mil)	Debt/Equity %			Debt/Total Cap %			EBITDA/Interest Exp.			Total Debt/EBITDA			Assets/Equity		
		2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*
Johnson & Johnson JNJ USA	27,126 USD	38.5	*43.5*	*39.0*	27.8	*30.3*	*28.1*	33.7	*31.0*	*30.5*	1.1	*1.2*	*1.1*	2.0	*2.0*	*1.9*
Merck & Co Inc MRK USA	27,081 USD	67.6	*64.6*	*62.6*	40.3	*39.2*	*38.5*	16.0	*23.4*	*23.8*	2.4	*1.7*	*1.7*	2.4	*2.4*	*2.3*
Amgen Inc AMGN USA	34,596 USD	115.8	*106.0*	*107.1*	53.7	*51.5*	*51.7*	9.6	*10.0*	*7.9*	2.9	*2.6*	*2.8*	2.6	*2.5*	*2.5*
AbbVie Inc ABBV USA	36,817 USD	794.2	*563.2*	*380.2*	88.8	*84.9*	*79.2*	11.2	*12.7*	*14.0*	3.4	*2.9*	*2.6*	14.3	*10.0*	*7.2*
Average		254.0	*194.3*	*147.2*	52.7	*51.5*	*49.4*	17.6	*19.3*	*19.1*	2.5	*2.1*	*2.1*	5.3	*4.2*	*3.5*
Roche Holding AG RHHBY US	**22,355** CHF	**93.5**	***65.2***	***45.7***	**48.3**	***39.5***	***31.4***	**29.9**	***36.5***	***41.4***	**1.1**	***0.9***	***0.7***	**3.2**	***2.7***	***2.3***

Liquidity Analysis

Company/Ticker	Market Cap (Mil)	Cash per Share			Current Ratio			Quick Ratio			Cash/Short-Term Debt			Payout Ratio %		
		2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*	2016	*2017(E)*	*2018(E)*
Johnson & Johnson JNJ USA	338,645 USD	15.03	*5.76*	*5.75*	2.47	*1.56*	*1.56*	2.16	*1.22*	*1.22*	8.95	*3.18*	*3.11*	53.1	*54.1*	*52.5*
Merck & Co Inc MRK USA	173,328 USD	5.15	*7.58*	*8.95*	1.78	*1.99*	*2.13*	1.50	*1.80*	*1.94*	5.11	*10.00*	*10.22*	130.7	*72.3*	*64.4*
Amgen Inc AMGN USA	120,230 USD	50.51	*53.08*	*60.24*	4.11	*2.99*	*6.07*	3.86	*2.81*	*5.71*	8.65	*4.30*	*23.31*	38.8	*42.5*	*50.8*
AbbVie Inc ABBV USA	104,443 USD	3.13	*3.01*	*4.12*	1.65	*2.26*	*2.50*	1.51	*2.07*	*2.31*	13.53	*12.88*	*17.33*	55.3	*52.4*	*46.2*
Average		18.46	*17.36*	*19.77*	2.50	*2.20*	*3.07*	2.26	*1.98*	*2.80*	9.06	*7.59*	*13.49*	69.5	*55.3*	*53.5*
Roche Holding AG RHHBY US	**217,548** USD	**10.59**	***12.88***	***15.74***	**1.27**	***1.57***	***1.82***	**0.92**	***1.16***	***1.37***	**1.70**	***4.22***	***8.03***	**55.8**	***51.8***	***51.8***

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

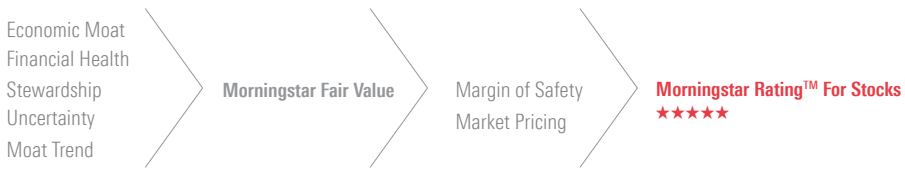
The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling 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.

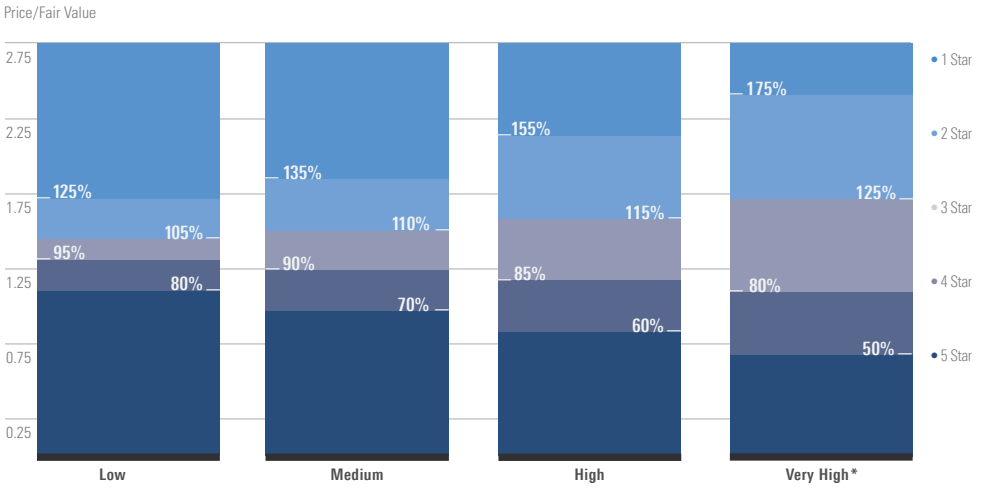
Four Stars ★★★★

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.

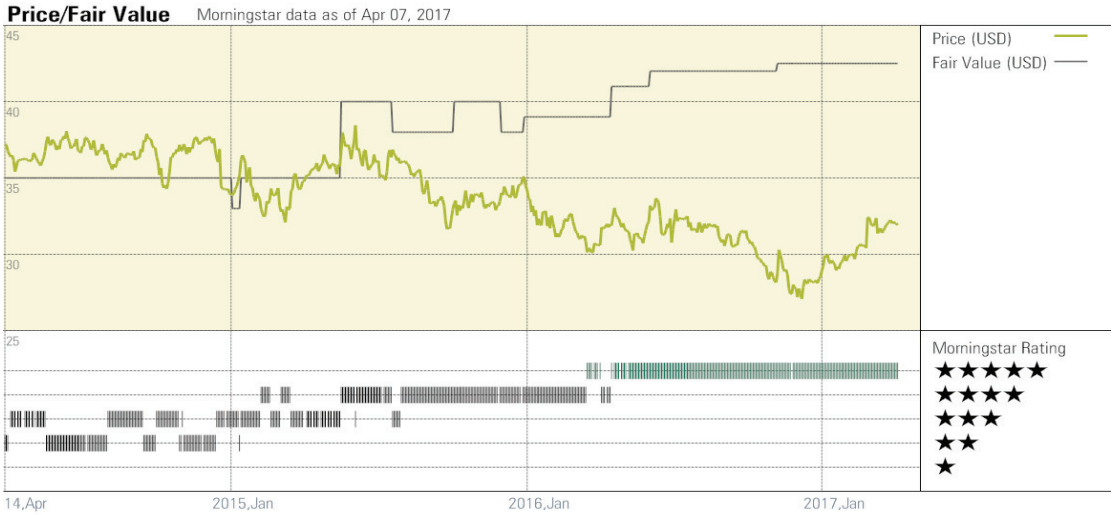
- **Undervalued:** Last Price is below Morningstar's quantitative fair value estimate.
- **Farily Valued:** Last Price is in line with Morningstar's quantitative fair value estimate.
- **Overvalued:** Last Price is above Morningstar's quantitative fair value estimate.

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.

Roche Holding AG RHHBY (PINX) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers



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Roche Holding AG RHHBY (PINX) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

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Roche Holding AG RHHBY (PINX) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

previous 12-months of any publicly disclosed offer of financial instruments of the issuer.

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Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
31.92 USD	42.50 USD	Low	Wide	Stable	Standard	Drug Manufacturers

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