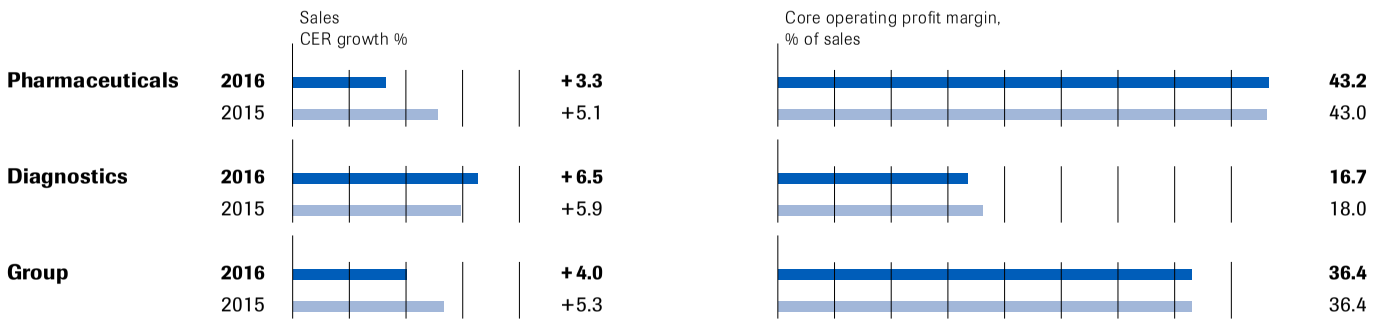
Finance Report 2016

Finance in brief

Key results



	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)	% of sales 2016	% of sales 2015
IFRS results						
Sales	50,576	48,145	+5	+4		
Operating profit	14,069	13,821	+2	+1	27.8	28.7
Net income	9,733	9,056	+7	+7	19.2	18.8
Net income attributable to Roche shareholders	9,576	8,863	+8	+8	18.9	18.4
Diluted EPS (CHF)	11.13	10.28	+8	+5		
Dividend per share (CHF) [1]	8.20	8.10	+1			
Core results						
Research and development	9,915	9,332	+6	+5	19.6	19.4
Core operating profit	18,420	17,542	+5	+4	36.4	36.4
Core EPS (CHF)	14.53	13.49	+8	+5		
Free cash flow						
Operating free cash flow	14,086	14,872	–5	–7	27.9	30.9
Free cash flow	9,130	10,306	–11	–14	18.1	21.4

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
Net debt	(13,248)	(14,080)	–6	–9
Capitalisation	48,757	46,551	+5	+3
– Debt	22,355	23,251	–4	–6
– Equity	26,402	23,300	+13	+11

1) Proposed by the Board of Directors.

CER (Constant Exchange Rates): The percentage changes at Constant Exchange Rates are calculated using simulations by reconsolidating both the 2016 and 2015 results at constant exchange rates (the average rates for the year ended 31 December 2015). For the definition of CER see page 144.

Core results and Core EPS (earnings per share): These exclude non-core items such as global restructuring plans and amortisation and impairment of goodwill and intangible assets. This allows an assessment of both the actual results and the underlying performance of the business. A full income statement for the Group and the operating results of the divisions are shown on both an IFRS and core basis. The core concept is fully described on pages 137–140 and reconciliations between the IFRS and Core results are given there.

The Group has refined the calculation of free cash flow in 2016 to exclude dividends, in line with its peer group. The free cash flow for 2015 has been restated accordingly, resulting in an increase of CHF 6,954 million to the free cash flow for that period. There was no impact on the operating free cash flow from this change. For the definition of free cash flow and a detailed breakdown see pages 140–142.

Finance – 2016 in brief

Roche in 2016

The **Roche Group** reported good overall results in 2016. Sales grew by 4% at constant exchange rates (CER) while IFRS net income increased by 7% and core earnings per share by 5%.

Sales

Group sales increased by 4% (CER) to CHF 50.6 billion (5% growth in CHF terms).
Pharmaceuticals sales growth was 3% (CER) due to continued growth in the HER2 franchise and MabThera/Rituxan in the oncology portfolio. In immunology, sales of Actemra/RoActemra, Esbriet and Xolair increased. Avastin sales were stable. Sales of Pegasys, Tarceva and Lucentis decreased due to competitive pressure.
Diagnostics sales showed growth of 7% (CER) with the Centralised and Point of Care Solutions business being the major contributor.

Operating results

Core operating profit increased by 4% (CER) to CHF 18.4 billion (5% increase in CHF terms).
Research and development expenditure grew by 5% (CER) to CHF 9.9 billion on a core basis, with the focus on the oncology and immunology therapeutic areas. Research and development costs represented 19.6% of Group sales.
IFRS operating results include non-core expenses (pre-tax) of CHF 4.4 billion. The major factors were CHF 1.8 billion for the amortisation of intangible assets, CHF 1.5 billion for the impairment of goodwill and intangible assets and CHF 1.2 billion from global restructuring plans, notably the Pharmaceuticals Division's strategic realignment of its manufacturing network.

Non-operating results

Core net financial expenses decreased by CHF 0.4 billion to CHF 1.0 billion, driven by lower foreign exchange losses, lower interest expenses, partially offset by higher losses on bond redemptions.
IFRS net financial expenses decreased by CHF 0.8 billion to CHF 1.1 billion as a result of the decrease in core net financial expenses. IFRS net financial expenses in 2015 included a loss of CHF 0.4 billion from a major debt restructuring.

Net income

IFRS net income increased by 7% at CER to CHF 9.7 billion (7% increase in CHF terms).
Core earnings per share increased by 5% at CER (+8% in CHF terms).

Cash flows

Operating free cash flow remained strong at CHF 14.1 billion. The underlying growth in operating cash generation was more than offset by higher capital expenditure, an increase in net working capital and higher investments in intangible assets, which led to a decrease of 7% at CER (5% in CHF terms).
Free cash flow decreased by 14% at CER (11% in CHF terms) to CHF 9.1 billion, driven by the lower operating free cash flow and higher pension contributions.

Financial position

Net working capital increased by 4% (CER), due to an increase in receivables driven by increased sales and due to higher inventories. This was partly offset by higher payables.
Net debt decreased to CHF 13.2 billion, as the generated free cash flow more than offset the dividends paid. Net debt as a percentage of total assets was 17%.
Credit ratings strong: Moody's at A1 and Standard & Poor's at AA.

Shareholder return

Dividends. A proposal will be made to increase dividends by 1% to CHF 8.20 per share. This will represent the 30th consecutive year of dividend growth and will result in a pay-out ratio of 56.4%, subject to AGM approval.
Total Shareholder Return (TSR) was minus 13% representing the combined performance of share and non-voting equity security.

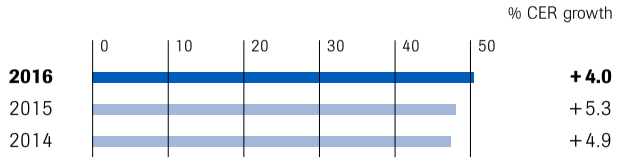
Roche Group

Roche Holding Ltd, Basel

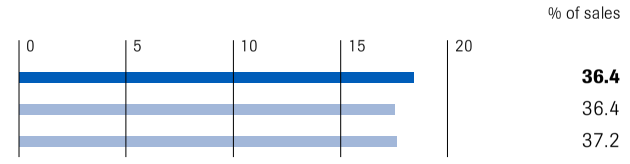
Financial Review

Roche Group results

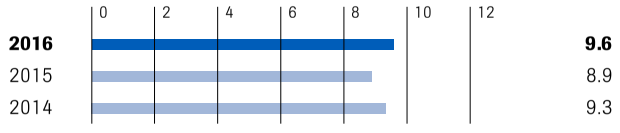
Sales in billions of CHF



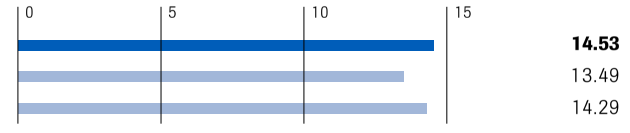
Core operating profit in billions of CHF



Net income attributable to Roche shareholders in billions of CHF



Core EPS in CHF



The Roche Group's results for 2016 showed sales growth of 4% at constant exchange rates (CER), with IFRS operating profit up by 1%, core operating profit by 4% and core EPS by 5%. The sales increase was driven by the Pharmaceuticals Division's oncology portfolio, especially the HER2 franchise, and by the Centralised and Point of Care Solutions business in the Diagnostics Division. There was increased expenditure in research and development and in launch expenses for new products, offset by income from changes to the Group's Swiss pension plans. Additionally costs grew in the Diagnostics Division due to the expansion of the sequencing business. Operating free cash flow was CHF 14.1 billion or 27.9% of sales, a decrease of 7% due to higher capital expenditure, an increase in net working capital and increased investments in intangible assets.

Sales in the Pharmaceuticals Division rose by 3% to CHF 39.1 billion. This increase was driven by the oncology portfolio, especially the HER2 franchise which grew by 8%. Sales in immunology grew by 10%, with Actemra/RoActemra and Xolair increasing by 16% and 15% respectively while sales of Pegasys, Tarceva and Lucentis declined under competitive pressure. Regional growth was most significant in the US and Europe. Diagnostics sales grew at 7%, consolidating the division's leading market position. The major growth area was Centralised and Point of Care Solutions, with sales increasing by 9%. Molecular Diagnostics and Tissue Diagnostics sales increased by 7% and 14% respectively, while sales in Diabetes Care decreased by 4% due to continuing challenging market conditions in the US.

IFRS operating profit increased by 1% in the Pharmaceuticals Division and was down by 1% in the Diagnostics Division. The increases in core operating profit were 4% and 1% respectively. The Pharmaceuticals Division's cost of sales increased manufacturing costs were offset by lower royalty expenses. Marketing and distribution costs grew driven by launch costs for new products, notably for Tecentriq and Ocrevus. In research and development, there were continued investments in oncology, especially in the cancer immunotherapy field, and in immunology. Cost of sales in the Diagnostics Division grew due to an unfavourable product mix and higher costs from external suppliers. Research and development expenses increased in the sequencing and molecular diagnostics businesses. The results of both divisions were positively impacted by the accounting effects of changes to the Group's Swiss pension plans.

Operating free cash flow was CHF 14.1 billion and remained strong. The growth in the cash generation of the businesses was offset by higher capital expenditure, an increase in net working capital and higher investments in intangible assets. Capital expenditure included manufacturing investments in the US, Switzerland, Germany and at Chugai. There were also site development activities in Switzerland and at the South San Francisco campus. The increase in net working capital in 2016 came from inventories where there was increased spending for launch preparations. These factors combined to give a decrease of 7% at CER (5% in CHF terms) relative to 2015. The free cash flow was CHF 9.1 billion, a decrease due to the lower operating free cash flow and higher pension contributions.

On a core basis net financial expenses were lower due to reductions in foreign exchange losses and lower interest expenses. On an IFRS basis they were additionally lower due to the comparative 2015 results including a loss of CHF 0.4 billion from a major debt restructuring. The Group's effective tax rates were higher due to the deferred tax impact arising from tax rate changes.

Net income increased by 7% at CER on both an IFRS basis and a core basis. In addition to the items described above in the core results, the IFRS results reflect impacts from higher intangible asset impairment and amortisation than in 2015, offset by releases from contingent consideration provisions.

In 2016 compared to 2015, the Swiss franc was weaker against most major currencies, in particular the Japanese yen, the US dollar and the euro. The overall impact is positive on the results expressed in Swiss francs compared to constant exchange rates, with a 1 percentage point impact on sales and core operating profit and 3 percentage points on Core EPS.

Income statement

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
IFRS results				
Sales	50,576	48,145	+5	+4
Royalties and other operating income	2,060	2,258	–9	–11
Cost of sales	(16,180)	(15,460)	+5	+3
Marketing and distribution	(9,140)	(8,814)	+4	+3
Research and development	(11,532)	(9,581)	+20	+19
General and administration	(1,715)	(2,727)	–37	–38
Operating profit	**14,069**	**13,821**	**+2**	**+1**
Financing costs	(1,099)	(1,574)	–30	–31
Other financial income (expense)	37	(260)	–	–
Profit before taxes	**13,007**	**11,987**	**+9**	**+8**
Income taxes	(3,274)	(2,931)	+12	+10
Net income	**9,733**	**9,056**	**+7**	**+7**
Attributable to				
– Roche shareholders	9,576	8,863	+8	+8
– Non-controlling interests	157	193	–19	–30
EPS – Basic (CHF)	11.24	10.42	+8	+5
EPS – Diluted (CHF)	11.13	10.28	+8	+5
Core results				
Sales	50,576	48,145	+5	+4
Royalties and other operating income	2,060	2,258	–9	–11
Cost of sales	(13,469)	(12,706)	+6	+5
Marketing and distribution	(9,007)	(8,610)	+5	+4
Research and development	(9,915)	(9,332)	+6	+5
General and administration	(1,825)	(2,213)	–18	–19
Operating profit	**18,420**	**17,542**	**+5**	**+4**
Financing costs	(1,034)	(1,140)	–9	–10
Other financial income (expense)	37	(276)	–	–
Profit before taxes	**17,423**	**16,126**	**+8**	**+7**
Income taxes	(4,735)	(4,289)	+10	+9
Net income	**12,688**	**11,837**	**+7**	**+7**
Attributable to				
– Roche shareholders	12,507	11,626	+8	+7
– Non-controlling interests	181	211	–14	–25
Core EPS – Basic (CHF)	14.68	13.66	+7	+5
Core EPS – Diluted (CHF)	14.53	13.49	+8	+5

Sales

In 2016 sales increased by 4% at CER (+5% in CHF; +3% in USD) to CHF 50.6 billion. Sales in the Pharmaceuticals Division rose 3% to CHF 39.1 billion, driven by growth in the HER2 franchise, as well as by Actemra/RoActemra, MabThera/Rituxan, Esbriet and Xolair. Sales grew in all regions, particularly in the US and Europe where the HER2 franchise grew by 4% and 8% respectively. Overall Avastin sales remained stable with a decrease in the US offset by higher sales in the International region. Sales of Pegasys, Tarceva and Lucentis declined under competitive pressure by a total of CHF 0.6 billion. The recently launched products Alecensa, Tecentriq and Cotellic added CHF 0.4 billion of sales.

Sales in the Diagnostics Division were CHF 11.5 billion, an increase of 7% at CER, consolidating its leading market position. The major growth area was in Centralised and Point of Care Solutions (formerly Professional Diagnostics), which represents more than half of the division's sales. This growth was led by the immunodiagnostics business. Sales in Molecular Diagnostics and Tissue Diagnostics increased by 7% and 14% respectively. Diabetes Care sales decreased by 4%, impacted by continuing challenging market conditions in North America.

Divisional operating results for 2016

	Pharmaceuticals (CHF m)	Diagnostics (CHF m)	Corporate (CHF m)	Group (CHF m)
Sales	39,103	11,473	–	50,576
Core operating profit	16,909	1,921	(410)	18,420
– margin, % of sales	43.2	16.7	–	36.4
Operating profit	13,285	1,213	(429)	14,069
– margin, % of sales	34.0	10.6	–	27.8
Operating free cash flow	13,859	720	(493)	14,086
– margin, % of sales	35.4	6.3	–	27.9

Divisional operating results – Development of results compared to 2015

	Pharmaceuticals	Diagnostics	Corporate	Group
Sales				
– % increase at CER	+3	+7	–	+4
Core operating profit				
– % increase at CER	+4	+1	–11	+4
– margin: percentage point increase	+0.4	–0.8	–	+0.1
Operating profit				
– % increase at CER	+1	–1	–9	+1
– margin: percentage point increase	–0.7	–0.8	–	–0.8
Operating free cash flow				
– % increase at CER	–6	–30	–14	–7
– margin: percentage point increase	–3.5	–3.1	–	–3.4

Core operating results

In 2016 there was a significant income item in the core results of CHF 426 million from changes to the Group's pension plans in Switzerland (CHF 341 million after tax). At CER this had a positive margin impact of 0.8 percentage points for the Group, 0.9 percentage points for the Pharmaceuticals Division and 0.7 percentage points for the Diagnostics Division. Excluding this item, core operating profit grew by 2% for the Group and for the Pharmaceuticals Division, while it declined by 2% in the Diagnostics Division.

Pharmaceuticals Division. The division's core operating profit increased 4% at CER, ahead of the 3% sales increase. Manufacturing costs of sales grew as a result of the investments in the internal and external biologics manufacturing network, while royalty expenses decreased due to the expiry of some patents. There was increased expenditure in research and development, especially in oncology and immunology, as well as launch expenses for Tecentriq and Ocrevus and other new products. This was partly offset by the income from the Swiss pension plan changes.

Diagnostics Division. Core operating profit increased by 1% at CER, below the 7% increase in sales. Cost of sales were higher because of an unfavourable product mix due to higher instrument placements and because of higher costs from external suppliers. Research and development costs increased due to the sequencing business. These were partly offset by the income from the Swiss pension plan changes.

Acquisitions

The Roche Group did not complete any business combinations in 2016. During 2016 there was CHF 408 million of non-core income from the release of contingent consideration provisions, mainly due to the partial reversal of the provisions related to the Seragon and Trophos acquisitions. There were two intangible asset impairment charges of CHF 885 million and CHF 187 million related to Seragon and Trophos respectively which offset this provision reversal as noted below in the 'Impairment of goodwill and intangible assets' commentary. Non-core costs also include expenses of CHF 167 million (2015: CHF 552 million) from the release of the Esbriet inventory fair value adjustment, which is now fully unwound. Further details are given in Notes 5 and 29 to the Annual Financial Statements.

Global restructuring plans

During 2016 the Group continued with the implementation of several major global restructuring plans initiated in prior years, notably the strategic realignment of the Pharmaceuticals Division's manufacturing network, and programmes to address long-term strategy in the Diagnostics Division.

Global restructuring plans: costs incurred for 2016 in millions of CHF

	Diagnostics[1]	Site consolidation[2]	Other plans[3]	Total
Global restructuring costs				
– Employee-related costs	90	86	127	303
– Site closure costs	33	367	3	403
– Other reorganisation expenses	189	271	67	527
Total global restructuring costs	**312**	**724**	**197**	**1,233**
Additional costs				
– Impairment of goodwill	–	–	–	–
– Impairment of intangible assets	–	–	–	–
– Legal and environmental cases	–	24	–	24
Total costs	**312**	**748**	**197**	**1,257**

1) Includes the Diabetes Care 'Autonomy and Speed' restructuring plan.
2) Includes the Pharmaceuticals Division strategic realignment of its manufacturing network.
3) Includes plans for Pharmaceuticals Division research and development strategic realignment and IT outsourcing.

Diagnostics Division. In 2016 costs from the Roche Diabetes Care 'Autonomy and Speed' initiative were CHF 132 million, mainly for consultancy and IT-related matters as well as employee-related costs. New strategy plans in Diagnostics and Diabetes Care incurred costs of CHF 106 million related to site closures and employees. Spending on other smaller plans within the division was CHF 74 million and included costs related to certain IT projects.

Site consolidation. In 2015 the Pharmaceuticals Division announced a strategic realignment of its manufacturing network including exiting from the manufacturing sites at Clarecastle, Ireland; Leganés, Spain; Segrate, Italy; and Florence, US. Costs from this plan in 2016 were CHF 733 million, of which CHF 337 million were non-cash write-downs and accelerated depreciation of property, plant and equipment and CHF 396 million were related to other site closures costs, reorganisation costs and employee costs. The divestment of the Nutley site in the US was completed in the second half of 2016 and resulted in an increase in provisions for environmental remediation.

Other global restructuring plans. The major items were CHF 74 million from the Pharmaceuticals Division research and development strategic realignment and CHF 90 million in informatics mainly for the outsourcing of IT functions to shared service centres and external providers.

Further details are given in Note 6 to the Annual Financial Statements.

Impairment of goodwill and intangible assets

There were impairment charges of CHF 1,438 million in the Pharmaceuticals Division. The largest item was CHF 885 million related to a decision to stop development of one compound acquired as part of the Seragon acquisition following a clinical data assessment. Additionally in the first half of 2016 there was CHF 187 million related to a delay in the development of the compound acquired as part of the Trophos acquisition following regulatory feedback. There were related releases of contingent consideration provisions for these two acquisitions which increased income by a total of CHF 389 million, noted above in the 'Acquisitions' commentary. The other major item was an impairment charge of CHF 162 million for one compound following a portfolio reassessment.

The Diagnostics Division recorded impairment charges of CHF 70 million with the largest item being the impairment of sequencing product intangibles in use of CHF 63 million as a result of a decision to stop the product development, commercialisation and licence agreement with an alliance partner.

Further details are given in Notes 8 and 9 to the Annual Financial Statements.

Pensions and other post-employment benefits

During 2016 operating income of CHF 426 million was recorded for past service costs from changes to the Group's pension plans in Switzerland that were announced in June 2016. This represents the impact of the adjustment of the pension liability for the plan changes. Of this amount, CHF 310 million was recorded in the Pharmaceuticals Division, CHF 77 million in the Diagnostics Division and CHF 39 million in Corporate. The after-tax impact was CHF 341 million. Pension contributions were higher in 2016 due to additional contributions to the plans in Switzerland, the US and Ireland. Further information on the Group's pensions and other post-employment benefits is given in Note 25 to the Annual Financial Statements.

Legal and environmental cases

The legal and environmental cases include an increase in provisions of CHF 24 million for environmental matters following the divestment of the Nutley site. There were no other significant developments in 2016. Further details are given in Note 19 to the Annual Financial Statements.

Treasury and taxation

Financing costs were 31% lower on an IFRS basis due to a loss in the comparative period of CHF 381 million from a major debt restructuring. On a core basis financing costs were down by 10% at CHF 1.0 billion, driven by lower interest expenses. Other financial income was CHF 37 million including net income from equity securities of CHF 154 million which was mostly offset by the net foreign exchange losses of CHF 124 million. IFRS tax expenses were CHF 3.3 billion, an increase of 10%. Core tax expenses increased by 9% to CHF 4.7 billion and the Group's effective core tax rate was 27.2% compared to 26.6% in 2015. This was largely due to the deferred tax impact arising from tax rate changes.

Net income and earnings per share

IFRS net income increased by 7% in CHF terms and in CER while diluted EPS increased by 8% in CHF terms and by 5% at CER. Core net income increased by 7% and Core EPS by 5% at CER. The core basis excludes non-core items such as global restructuring costs, amortisation and impairment of goodwill and intangible assets, and alliance and business combination costs. Core EPS increased by 2% when excluding the positive impact from the changes to the Group's Swiss pension plans.

Net income

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
IFRS net income	**9,733**	**9,056**	**+7**	**+7**
Reconciling items (net of tax)				
– Global restructuring plans	965	868	+11	+10
– Intangible asset amortisation	912	854	+7	+5
– Goodwill and intangible asset impairment	1,146	49	Over +500	Over +500
– Alliances and business combinations	(222)	594	–	–
– Legal and environmental cases	57	142	–60	–61
– Major debt restructuring	0	248	–100	–100
– Pension plan settlements	(11)	(4)	+175	+209
– Normalisation of equity compensation plan tax benefit	108	30	+260	+252
Core net income	**12,688**	**11,837**	**+7**	**+7**

Supplementary net income and EPS information is given on pages 137 to 140. This includes calculations of core EPS and reconciles the core results to the Group's published IFRS results.

Financial position

Financial position

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
Pharmaceuticals				
Net working capital	4,582	4,437	+3	0
Long-term net operating assets	26,174	26,179	0	–2
Diagnostics				
Net working capital	2,796	2,533	+10	+10
Long-term net operating assets	13,392	12,899	+4	+2
Corporate				
Net working capital	(104)	(108)	–4	–4
Long-term net operating assets	(213)	(258)	–17	–19
Net operating assets	**46,627**	**45,682**	**+2**	**0**
Net debt	(13,248)	(14,080)	–6	–9
Pensions	(6,940)	(7,699)	–10	–10
Income taxes	(390)	(523)	–25	–38
Other non-operating assets, net	353	(80)	–	–
Total net assets	**26,402**	**23,300**	**+13**	**+11**

Compared to the start of the year the Swiss franc depreciated significantly against the Japanese yen and also against the US dollar and the Brazilian real, which resulted in a positive translation impact on balance sheet positions. The positive US dollar translation impact on net operating assets was offset at Group level by the natural hedge from the Group's US dollar-denominated debt. The exchange rates used are given on page 27.

In the Pharmaceuticals Division net working capital was stable at CER. There was an increase in trade receivables in line with sales growth. Underlying inventory levels remained stable overall, excluding the final unwind of the Esbriet inventory fair value adjustment. An increase in inventories for launch preparations was offset by inventory write-downs. Payables increased as a result of further conversion of vendors to extended payment terms. Long-term net operating assets were lower mainly due to amortisation and due to an impairment of one compound acquired as part of the Seragon acquisition. In Diagnostics the increase in net working capital of 10% at CER was driven by an increase in inventories due to higher demand in emerging markets and the preparation for new launches. Trade receivables increased due to sales growth in the Asia-Pacific and Latin America regions. Payables increased since the end of 2015 as a result of optimisation measures. Long-term net operating assets increased mainly due to continued capital expenditure.

Net debt was CHF 13.2 billion, a decrease of CHF 0.8 billion, with the free cash flow of CHF 9.1 billion being largely used for the dividend payments of CHF 7.0 billion. The net pension liability decreased to CHF 6.9 billion due to improved asset performance and additional pension contributions, which more than offset the impact of lower discount rates in all regions. The net tax liabilities decreased with the main factors being the deferred tax effects from the impairment of intangible assets, from decreased net pension liabilities and from equity compensation plans that are variable according to the price of the underlying equity.

Free cash flow

Free cash flow

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
Pharmaceuticals	13,859	14,482	–4	–6
Diagnostics	720	963	–25	–30
Corporate	(493)	(573)	–14	–14
Operating free cash flow	**14,086**	**14,872**	**–5**	**–7**
Treasury activities	(1,218)	(870)	+40	+41
Taxes paid	(3,738)	(3,696)	+1	–1
Free cash flow	**9,130**	**10,306**	**–11**	**–14**

For the definition of free cash flow and a detailed breakdown see pages 140–142.

The Group's operating free cash flow for 2016 remained strong at CHF 14.1 billion. The decrease relative to 2015 occurred as the growth in cash generation of the business was offset by higher capital expenditures, an increase in net working capital and higher investments in intangible assets. The free cash flow was CHF 9.1 billion, a decrease compared to 2015, due to the lower operating free cash flow and higher pension contributions. The Group has refined the calculation of the free cash flow in 2016 to exclude dividends, in line with its peer group. Comparative 2015 free cash flow information has been restated accordingly. There was no impact on the operating free cash flow from this change.

Pharmaceuticals Division operating results

Pharmaceuticals Division operating results

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
IFRS results				
Sales	39,103	37,331	+5	+3
Royalties and other operating income	1,944	2,119	–8	–10
Cost of sales	(10,393)	(10,249)	+1	–1
Marketing and distribution	(6,391)	(6,154)	+4	+2
Research and development	(10,156)	(8,367)	+21	+20
General and administration	(822)	(1,677)	–51	–52
Operating profit	**13,285**	**13,003**	**+2**	**+1**
– margin, % of sales	34.0	34.8	–0.8	–0.7
Core results[1]				
Sales	39,103	37,331	+5	+3
Royalties and other operating income	1,944	2,119	–8	–10
Cost of sales	(8,175)	(7,900)	+3	+1
Marketing and distribution	(6,362)	(6,066)	+5	+3
Research and development	(8,588)	(8,134)	+6	+4
General and administration	(1,013)	(1,295)	–22	–23
Core operating profit	**16,909**	**16,055**	**+5**	**+4**
– margin, % of sales	43.2	43.0	+0.2	+0.4
Financial position				
Net working capital	4,582	4,437	+3	0
Long-term net operating assets	26,174	26,179	0	–2
Net operating assets	**30,756**	**30,616**	**0**	**–2**
Free cash flow				
Operating free cash flow	13,859	14,482	–4	–6
– margin, % of sales	35.4	38.8	–3.4	–3.5

1) See pages 137–140 for the definition of Core results and Core EPS.

Sales overview

Pharmaceuticals Division – Sales by therapeutic area

Therapeutic area	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Oncology	24,841	23,661	+4	64	63
Immunology	6,970	6,228	+10	18	17
Infectious diseases	1,773	2,051	–14	5	5
Ophthalmology	1,406	1,520	–10	4	4
Neuroscience	657	648	+2	2	2
Other therapeutic areas	3,456	3,223	+3	7	9
Total sales	**39,103**	**37,331**	**+3**	**100**	**100**

Pharmaceuticals Division sales increased by 3% at CER to CHF 39.1 billion led by growth in oncology and immunology products. Sales growth was primarily driven by Perjeta, Herceptin, Actemra/RoActemra, MabThera/Rituxan, Esbriet and Xolair. These products together contributed CHF 1.4 billion at CER to sales growth in 2016. Sales of Pegasys, Tarceva and Lucentis declined by a total of CHF 0.6 billion under competitive pressure and sales of Valcyte/Cymevene decreased due to generic competition. The recently launched products Alecensa, Tecentriq and Cotellic added CHF 0.4 billion of sales.

The growth of 8% in the HER2 franchise resulted from increased demand for Perjeta and Herceptin in combination therapy and continued uptake of Kadcyla. Sales increases in immunology mainly came from increasing use of Actemra/RoActemra in Europe and the US, and from Xolair and Esbriet sales in the US. MabThera/Rituxan sales continued to grow, especially in the US, China and Germany. Avastin sales were stable with the lower US sales offset by growth in the International region, particularly in China. Sales in the US, notably of MabThera/Rituxan and Herceptin, were negatively impacted by an increase in reserves for mandatory discounts to hospitals under the 340B Drug Discount Program.

Product sales

Pharmaceuticals Division – Sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Oncology					
Avastin	6,783	6,684	0	18	18
Herceptin	6,782	6,538	+4	18	18
MabThera/Rituxan[1]	5,823	5,640	+2	15	15
Perjeta	1,846	1,445	+26	5	4
Tarceva	1,024	1,181	–15	2	3
Kadcyla	831	769	+7	2	2
Xeloda	506	513	–3	1	1
Gazyva/Gazyvaro	196	128	+52	1	0
Others	1,050	763	+33	2	2
Total Oncology	**24,841**	**23,661**	**+4**	**64**	**63**
Immunology					
Actemra/RoActemra	1,697	1,432	+16	4	4
Xolair	1,498	1,277	+15	4	3
MabThera/Rituxan[1]	1,477	1,405	+5	4	4
Esbriet	768	563	+34	2	2
CellCept	741	785	–6	2	2
Pulmozyme	685	652	+4	2	2
Others	104	114	–18	0	0
Total Immunology	**6,970**	**6,228**	**+10**	**18**	**17**
Infectious diseases					
Tamiflu	794	705	+10	2	2
Valcyte/Cymevene	306	369	–17	1	1
Rocephin	298	279	+7	1	1
Pegasys	259	538	–52	1	1
Others	116	160	–27	0	0
Total Infectious diseases	**1,773**	**2,051**	**–14**	**5**	**5**
Ophthalmology					
Lucentis	1,406	1,520	–10	4	4
Total Ophthalmology	**1,406**	**1,520**	**–10**	**4**	**4**
Neuroscience					
Madopar	290	275	+6	1	1
Others	367	373	–1	1	1
Total Neuroscience	**657**	**648**	**+2**	**2**	**2**
Other therapeutic areas					
Activase/TNKase	1,108	935	+16	2	3
Mircera	512	475	+2	1	1
NeoRecormon/Epogin	328	366	–9	1	1
Others	1,508	1,447	–2	3	4
Total other therapeutic areas	**3,456**	**3,223**	**+3**	**7**	**9**
Total sales	**39,103**	**37,331**	**+3**	**100**	**100**

1) Total MabThera/Rituxan sales of CHF 7,300 million (2015: CHF 7,045 million) split between oncology and immunology franchises.

MabThera/Rituxan. For non-Hodgkin lymphoma (NHL), chronic lymphocytic leukaemia (CLL), follicular lymphoma (FL) and rheumatoid arthritis (RA) as well as certain types of ANCA-associated vasculitis.

MabThera/Rituxan regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	3,911	3,760	+2	54	53
Europe	1,879	1,818	+3	26	26
Japan	291	230	+11	4	3
International	1,219	1,237	+4	16	18
Total sales	**7,300**	**7,045**	**+3**	**100**	**100**

Sales were 3% higher, driven primarily by growth in China (+25%) and in the US (+2%) in oncology and immunology. Sales in the US were negatively impacted by higher discounts to hospitals under the 340B Drug Discount Program. Sales in Europe increased by 3%, mainly coming from sales growth in Germany and France. Sales growth in Japan was mainly due to an increase in market share reflecting the approval for additional dosage and administration for non-Hodgkin lymphoma maintenance therapy.

HER2 franchise (Herceptin, Perjeta and Kadcyla). For HER2-positive breast cancer and HER2-positive metastatic (advanced) gastric cancer (Herceptin only).

Herceptin regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	2,509	2,384	+3	37	36
Europe	2,055	2,010	+2	30	31
Japan	309	260	+4	5	4
International	1,909	1,884	+6	28	29
Total sales	**6,782**	**6,538**	**+4**	**100**	**100**

Perjeta regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	905	804	+10	49	56
Europe	628	432	+44	34	30
Japan	108	84	+12	6	6
International	205	125	+74	11	8
Total sales	**1,846**	**1,445**	**+26**	**100**	**100**

Kadcyla regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	316	308	0	38	40
Europe	331	323	+2	40	42
Japan	75	58	+13	9	8
International	109	80	+46	13	10
Total sales	**831**	**769**	**+7**	**100**	**100**

Overall growth in the HER2 franchise was 8%. Herceptin sales grew 4% with continued growth in the US (+3%) resulting from a longer duration of treatment in combination with Perjeta for both early and advanced breast cancer. Herceptin sales in the US were also negatively impacted by the 340B Drug Discount Program. In Europe, Herceptin sales continued to grow, especially in the UK and in Germany. Demand for Herceptin in the International region (+6%) was mainly driven by China (+22%). Perjeta sales increased in all regions, particularly in Europe (+44%) and the US (+10%), where it was approved for use before surgery in early-stage aggressive breast cancer. Kadcyla sales growth was mainly driven by the International region (+46%) as well as Europe (+2%), notably in Germany. In Japan the HER2 franchise grew overall, especially Kadcyla, in particular in second-line treatment and for Perjeta in first-line treatment of HER2-positive metastatic or recurrent breast cancer.

Avastin. For advanced colorectal, breast, lung, kidney, cervical and ovarian cancer, and relapsed glioblastoma (a type of brain tumour).

Avastin regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	2,964	3,058	–5	44	46
Europe	1,841	1,813	0	27	27
Japan	834	746	–2	12	11
International	1,144	1,067	+18	17	16
Total sales	**6,783**	**6,684**	**0**	**100**	**100**

Demand for Avastin continued to be robust and sales remained stable overall. In the US sales decreased by 5% as a result of growing use of new immunotherapy agents in the lung cancer setting. In Europe sales were stable. While growth came from increasing treatment of ovarian, colorectal, lung and cervical cancer, sales were negatively impacted by the delisting of Avastin in the UK and France for certain indications. Sales in the International region grew 18% and were mainly driven by increased market access in China and South Korea as well as by inflationary price increases in Argentina. In Japan sales decreased by 2% due to the negative impact from bi-annual government price cuts, partially offset by volume growth.

Actemra/RoActemra. For rheumatoid arthritis (RA), systemic juvenile idiopathic arthritis and polyarticular juvenile idiopathic arthritis.

Actemra/RoActemra regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	647	550	+15	38	38
Europe	558	473	+18	33	33
Japan	284	221	+13	17	15
International	208	188	+18	12	14
Total sales	**1,697**	**1,432**	**+16**	**100**	**100**

Sales increased by 16%, with growth in all regions. This was especially driven by increased demand for the subcutaneous formulation, which represented 39% of the total Actemra/RoActemra sales, and in monotherapy.

Xolair. For moderate to severe persistent allergic asthma (AA) and chronic idiopathic urticaria (CIU).

Xolair regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	1,498	1,277	+15	100	100
Total sales	**1,498**	**1,277**	**+15**	**100**	**100**

US sales increased by 15% due to higher prescriptions for allergic asthma following the new approval for its use in children, as well as continued uptake in chronic idiopathic urticaria.

Lucentis. For wet age-related macular degeneration (wet AMD), macular oedema following retinal vein occlusion (RVO) and diabetic macular oedema (DME).

Lucentis regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	1,406	1,520	–10	100	100
Total sales	**1,406**	**1,520**	**–10**	**100**	**100**

Sales of Lucentis declined by 10% due to competition in the wet AMD and DME segments.

Tarceva. For advanced non-small cell lung (NSCLC) and pancreatic cancer.

Tarceva regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	560	638	–14	55	54
Europe	174	220	–22	17	19
Japan	104	92	–1	10	8
International	186	231	–17	18	19
Total sales	**1,024**	**1,181**	**–15**	**100**	**100**

Sales were 15% lower, with declining sales in the US, Europe and the International region due to increasing competitive pressure.

TNKase/Activase. For acute ischemic stroke (AIS) and acute myocardial infarction (AMI).

TNKase/Activase regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	1,062	890	+17	96	95
International	46	45	+3	4	5
Total sales	**1,108**	**935**	**+16**	**100**	**100**

Sales were 16% higher, led by 17% growth in the US, and mainly driven by updated prescribing information and more patients being treated.

Esbriet. For idiopathic pulmonary fibrosis (IPF).

Esbriet regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	569	386	+44	74	69
Europe	179	152	+17	23	27
International	20	25	–17	3	4
Total sales	**768**	**563**	**+34**	**100**	**100**

There was continued uptake of Esbriet in the US, while sales growth in Europe was driven mainly by Spain and Italy.

Pharmaceuticals Division – Sales by region

Region	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
United States	18,594	17,616	+3	49	47
Europe	9,159	8,734	+4	23	23
Japan	3,711	3,224	+1	9	9
International	7,639	7,757	+4	19	21
– EEMEA[1]	*1,621*	*1,587*	*+4*	*4*	*4*
– Latin America	*1,868*	*2,052*	*+7*	*6*	*5*
– Asia-Pacific	*3,291*	*3,191*	*+4*	*7*	*9*
– Other regions	*859*	*927*	*–7*	*2*	*3*
Total sales	**39,103**	**37,331**	**+3**	**100**	**100**

1) Eastern Europe, Middle East and Africa.

United States. Sales grew by 3% led by new indications for Xolair (+15%) and growth by recently launched products Esbriet (+44%), Tecentriq and Alecensa. The HER2 franchise growth (+4%) was driven by longer duration of combination treatment for Herceptin and Perjeta. Sales of Lucentis fell by 10% due to competitive pressure. Avastin sales decreased by 5% as a result of growing use of new immunotherapy agents in the lung cancer setting. In addition, Tamiflu sales declined by 14% due to a weaker influenza season. Higher mandatory discounts to hospitals under the 340B Drug Discount Program affected MabThera/Rituxan and Herceptin sales particularly.

Europe. Sales growth of 4% was due to Perjeta, Actemra/RoActemra, MabThera/Rituxan and Herceptin. The growth was partially offset by continued price pressure across the region. Sales in Germany grew by 9%, led by the HER2 franchise, Avastin and MabThera/Rituxan. UK sales grew 11% due to a governmental Tamiflu order while being negatively impacted by the Cancer Drugs Fund's delisting of Avastin for certain indications.

Japan. Sales grew by 1% despite the government price cuts which had a negative effect on sales of approximately 6%. Growth was driven by Tamiflu (+64%) and Alecensa (+48%). Sales growth also came from the osteoporosis medicine Edirol, Actemra/RoActemra, the HER2 franchise and MabThera/Rituxan, partially offset by lower sales of Femara, Neutrogin and Oxarol.

International. Sales increased by 4% driven by the Asia-Pacific and Latin America regions. Sales in China grew due to additional provincial reimbursements for Herceptin, Avastin and MabThera/Rituxan. Sales growth in South Korea came from increased sales of Avastin and from the HER2 franchise. Sales growth in Latin America was driven in part by inflationary price increases in Argentina. In Mexico the sales decline was mainly driven by the local loss of exclusivity for Valcyte/Cymevene and Xeloda. Sales growth in Turkey came from the HER2 franchise.

Pharmaceuticals Division – Sales for E7 leading emerging markets

Country	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Brazil	741	748	+2	2	2
China	1,721	1,663	+6	4	5
India	81	91	–8	0	0
Mexico	272	330	–5	1	1
Russia	149	160	–1	0	0
South Korea	325	279	+17	1	1
Turkey	297	286	+12	1	1
Total sales	**3,586**	**3,557**	**+5**	**9**	**10**

Competition from generic medicines and biosimilars

The Group's pharmaceutical products are generally protected by patent rights which are intended to provide the Group with exclusive marketing rights in various countries. However, patent rights are of varying scope and duration, and the Group may be required to enter into costly litigation to enforce its patent and other intellectual property rights. Loss of market exclusivity for one or more major products – either due to patent expiration, challenges from generic medicines, biosimilars and non-comparable biologics or other reasons – could have a material adverse effect on the Group's business, results of operations or financial condition. The introduction of a generic, biosimilar or non-comparable biologic version of the same or a similar medicine typically results in a significant reduction in net sales for the relevant product, as other manufacturers typically offer their versions at lower prices.

Patents and their expiry are, and always have been, an integral part of the Group's business model and future growth will remain driven by innovation. The latest information from clinical studies is included in the Annual Report on pages 48 to 53 and details of the Group's Product Development Portfolio are available for download at: http://www.roche.com/research_and_development/who_we_are_how_we_work/pipeline.htm

2016 product sales affected by recent patent expiry

	2016 (CHF m)	2015 (CHF m)	% change (CER)	Comment
Valcyte/Cymevene	306	369	–17	US patent expiry in 2015, other major markets from 2017

There are recent or approaching patent expiries in the US and/or other major markets for Pegasys and Tamiflu which may have an impact on 2017 sales for these products.

The intellectual property for biologics can involve multiple patents and patent timelines for each individual product and therefore it is more difficult to give an exact date for patent expiry for biologic medicines. The Group currently estimates that some basic, primary patents for its major biologic medicines will begin to expire as follows:

- MabThera/Rituxan: from around mid-2018 in the US.
- Herceptin: from around 2019 in the US.
- Avastin: from around 2020 in the US and from around 2020 in the EU.
- Subcutaneous formulations of MabThera/Rituxan and Herceptin: beyond 2025 (secondary patent rights).

The patents for MabThera/Rituxan and Herceptin in the EU have expired. Based on publicly available information from competitor companies, the Group currently anticipates that first biosimilar versions of these biologic medicines could come to market in Europe from 2017 onwards. There are still many uncertainties surrounding when specific biosimilar versions of the Group's biologic medicines will be approved by the US Food and Drug Administration.

Operating results

Pharmaceuticals Division – Royalties and other operating income

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Royalty income	1,521	1,702	–13
Income from out-licensing agreements	98	239	–61
Income from disposal of products and other	325	178	+79
Total – IFRS and Core basis	**1,944**	**2,119**	**–10**

The decrease of 10% at CER was due to lower royalty income and lower income from out-licensing agreements. Royalty income fell by 13% due to the comparative period of 2015 including certain significant royalty income. In addition certain patents expired for some royalty agreements. This was partly offset by increased sales by third parties for other royalty-bearing products. The decrease in out-licensing income was due to income in 2015 for the commercialisation of Mircera in the US and from a collaboration partner for a de-blocking amendment. Income from product disposals and other operating income increased due to higher profit-sharing income, mainly as a result of higher Xolair sales in Europe and also the product divestment of Xenical.

Pharmaceuticals Division – Cost of sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Manufacturing cost of goods sold and period costs	(5,211)	(4,584)	+11
Royalty expenses	(811)	(1,225)	–35
Collaboration and profit-sharing agreements	(2,126)	(2,083)	0
Impairment of property, plant and equipment	(27)	(8)	+222
Cost of sales – Core basis	**(8,175)**	**(7,900)**	**+1**
Global restructuring plans	(737)	(558)	+31
Amortisation of intangible assets	(1,314)	(1,239)	+4
Business combinations – inventory fair value adjustment	(167)	(552)	–70
Total – IFRS basis	**(10,393)**	**(10,249)**	**–1**

Core costs increased by 1% at CER. As a percentage of sales, cost of sales decreased by 0.3 percentage points to 20.9%. Manufacturing cost of sales grew at 11%, ahead of the sales growth of 3%. The Pharmaceuticals Division has made considerable investments in its biologics manufacturing network in recent years and as these facilities come on line, this leads to a certain increase in costs, especially during the ramp-up phases. There is also temporary lower utilisation in small molecules manufacturing during the site transformation period. Additionally external contract manufacturers are being used for some products to give flexibility and security to the supply chain. Write-downs of inventories in 2016 were also higher. Royalty expenses were 35% lower due to the expiry of some royalty-bearing patents, including some for Avastin and Herceptin. Non-core costs include the amortisation of the intangible assets, mainly related to the InterMune acquisition, and the final unwind of the inventory fair value adjustment for the acquired Esbriet inventories. Global restructuring costs are mainly due to the manufacturing strategic realignment initiative announced in 2015.

Pharmaceuticals Division – Marketing and distribution

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Marketing and distribution – Core basis	**(6,362)**	**(6,066)**	**+3**
Global restructuring plans	(26)	(87)	–69
Amortisation of intangible assets	(3)	(1)	–
Total – IFRS basis	**(6,391)**	**(6,154)**	**+2**

Core costs increased by 3% at CER and as a percentage of sales rose slightly to 16.3% (2015: 16.2%). Costs were incurred to ensure increased patient access and for the launches of Tecentriq, Ocrevus, Alecensa, Venclexta and other products. Restructuring costs relate to productivity initiatives mainly in the Asia-Pacific region.

Pharmaceuticals Division – Research and development

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Research and development – Core basis	**(8,588)**	**(8,134)**	**+4**
Global restructuring plans	(90)	(46)	+97
Amortisation of intangible assets	(135)	(118)	+13
Impairment of intangible assets	(1,343)	(69)	Over +500
Total – IFRS basis	**(10,156)**	**(8,367)**	**+20**

Core costs increased by 4% at CER and, as a percentage of sales, increased to 22.0% compared to 21.8% in 2015. The oncology franchise remained the primary area of research and development, notably in cancer immunotherapy. In late-stage development, growth was mainly for oncology. Early-stage research and development expenses increases related to oncology and immunology. In addition the Pharmaceuticals Division spent CHF 1,033 million (2015: CHF 441 million) on the in-licensing of pipeline compounds and technologies, which are capitalised as intangible assets. Global restructuring costs mainly came from the strategic realignment of the research and development area. The significant impairment charges in 2016 relate to the decision to stop development of one compound acquired as part of the Seragon acquisition following a clinical data assessment, a delay in the development of the compound acquired as part of the Trophos acquisition and a portfolio reassessment of one other compound.

Pharmaceuticals Division – General and administration

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Administration	(1,142)	(1,086)	+4
Pensions – past service costs	311	(7)	–
Gains (losses) on disposal of property, plant and equipment	(2)	0	–
Business taxes and capital taxes	(281)	(253)	+9
Other general items	101	51	+100
General and administration – Core basis	**(1,013)**	**(1,295)**	**–23**
Global restructuring plans	(82)	(65)	+22
Impairment of goodwill and intangible assets	(95)	0	–
Alliances and business combinations	376	(162)	–
Legal and environmental cases	(18)	(158)	–89
Pensions – settlement gains (losses)	10	3	+240
Total – IFRS basis	**(822)**	**(1,677)**	**–52**

Core costs decreased by 23% at CER and as a percentage of sales decreased to 2.6% from 3.5% mainly due to income from changes in the Group's Swiss pension plans in the first half of 2016. Excluding this, core costs increased by 1%. There was an impairment charge for the full write-off of the goodwill from the Anadys acquisition. The alliance and business combination income came from the partial reversal of the contingent consideration provision for the Seragon and Trophos acquisitions.

Roche Pharmaceuticals and Chugai sub-divisional operating results

Pharmaceuticals sub-divisional operating results in millions of CHF

	Roche Pharmaceuticals		Chugai		Pharmaceuticals Division	
	2016	2015	2016	2015	2016	2015
Sales						
– External customers	35,392	34,107	3,711	3,224	39,103	37,331
– Within division	1,363	1,310	568	502	1,931	1,812
Core operating profit	16,065	15,383	717	710	16,909	16,055
– margin, % of sales to external customers	45.4	45.1	19.3	22.0	43.2	43.0
Operating profit	12,476	12,372	682	669	13,285	13,003
– margin, % of sales to external customers	35.3	36.3	18.4	20.8	34.0	34.8
Operating free cash flow	13,592	13,971	267	511	13,859	14,482
– margin, % of sales	38.4	41.0	7.2	15.8	35.4	38.8

Pharmaceuticals Division total core operating profit and operating profit both include the elimination of minus CHF 127 million of unrealised inter-company gains between Roche Pharmaceuticals and Chugai (2015: CHF 38 million).

The increase in the exchange rate of the Japanese yen has a positive impact of approximately 12% on the Chugai results when expressed in Swiss francs. In Japanese yen, sales to external customers by Chugai increased by 1%, while sales within the division were in line with 2015. Chugai core operating profit decreased by 11% due to lower gross profit on sales within the division, lower milestone income and higher research and development costs, partially offset by higher gross profit on sales to external customers and lower marketing and distribution costs. Operating free cash flow at Chugai decreased by 54% due to capital expenditure projects in manufacturing and research and by the lower operating profit.

Financial position

Pharmaceuticals Division – Net operating assets

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)	Movement: Transactions (CHF m)	Movement: CTA (CHF m)
Trade receivables	5,851	5,550	+5	+3	168	133
Inventories	5,634	5,655	0	–3	(121)	100
Trade payables	(1,645)	(1,541)	+7	+5	(72)	(32)
Net trade working capital	**9,840**	**9,664**	**+2**	**–1**	**(25)**	**201**
Other receivables/(payables)	(5,258)	(5,227)	+1	–1	64	(95)
Net working capital	**4,582**	**4,437**	**+3**	**0**	**39**	**106**
Property, plant and equipment	13,944	13,082	+7	+5	598	264
Goodwill and intangible assets	14,869	16,320	–9	–12	(1,857)	406
Provisions	(2,751)	(3,298)	–17	–18	590	(43)
Other long-term assets, net	112	75	+49	+42	32	5
Long-term net operating assets	**26,174**	**26,179**	**0**	**–2**	**(637)**	**632**
Net operating assets	**30,756**	**30,616**	**0**	**–2**	**(598)**	**738**

The absolute amount of the movement between the 2016 and 2015 consolidated balances reported in Swiss francs is split between actual 2016 transactions (translated at average rates for 2015) and the currency translation adjustment (CTA) that arises on consolidation. The 2016 transactions include non-cash movements and therefore the movements in this table are not the same as the amounts shown in the operating free cash flow (which only includes the cash movements). A full consolidated balance sheet is given on page 41 of the Annual Financial Statements, and a reconciliation between that balance sheet and the information given above is on page 143.

Currency translation effects on balance sheet amounts. Compared to the start of the year the Swiss franc depreciated significantly against the Japanese yen and also against the US dollar and the Brazilian real, resulting in a positive translation impact on net operating assets. The exchange rates used are given on page 27.

Net working capital. There was an increase in trade receivables, in line with sales growth. Inventory levels overall remained stable compared to the end of 2015, excluding the final unwind of CHF 167 million for the Esbriet inventory fair value adjustment. An increase in inventories for launch preparations was offset by inventory write-downs. Payables increased since the end of 2015 as a result of further conversion of vendors to longer payment terms.

Long-term net operating assets. Overall long-term net operating assets were 2% lower. Property, plant and equipment has increased due to manufacturing investments in the US, Switzerland, Germany and Chugai and in the US. Site development continued in Switzerland at the Basel and Kaiseraugst sites and also at the South San Francisco campus in line with the sites' master plans. The decrease in intangible assets mainly due to amortisation and an impairment of one compound acquired as part of the Seragon acquisition. Provisions decreased due to the reversal of contingent consideration provisions and the utilisation of restructuring provisions, mainly related to restructuring of the division's manufacturing network.

Free cash flow

Pharmaceuticals Division – Operating free cash flow

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
Operating profit	**13,285**	**13,003**	**+2**	**+1**
– Depreciation, amortisation and impairment	4,358	2,705	+61	+58
– Provisions	(589)	249	–	–
– Equity compensation plans	371	323	+15	+12
– Other	519	1,037	–50	–59
Operating profit cash adjustments	**4,659**	**4,314**	**+8**	**+3**
Operating profit, net of operating cash adjustments	**17,944**	**17,317**	**+4**	**+2**
(Increase) decrease in net working capital	(586)	(260)	+125	+110
Investments in property, plant and equipment	(2,510)	(2,062)	+22	+19
Investments in intangible assets	(989)	(513)	+93	+89
Operating free cash flow	**13,859**	**14,482**	**–4**	**–6**
– as % of sales	35.4	38.8	–3.4	–3.5

For the definition of free cash flow and a detailed breakdown see pages 140–142.

The Pharmaceuticals Division generated an operating free cash flow of CHF 13.9 billion. The underlying cash generation remains strong, although 2016 shows a decrease of 6% driven by higher capital expenditure, increasing net working capital and higher investments in intangible assets from new asset deals in 2016. The increase in net working capital came from inventories where there was increased spending for launch preparations. Trade receivables grew in line with sales during 2016, while in 2015 there was a positive impact on the operating free cash flow from lower year-end balances. The main items of capital expenditure were driven by the projects in Switzerland, Germany, in the US and at Chugai described above in the 'Financial position' section. Investments in intangible assets include the in-licensing of pipeline compounds and technologies and other asset deals.

Diagnostics Division operating results

Diagnostics Division operating results

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
IFRS results				
Sales	11,473	10,814	+6	+7
Royalties and other operating income	116	139	–17	–17
Cost of sales	(5,787)	(5,211)	+11	+11
Marketing and distribution	(2,749)	(2,660)	+3	+3
Research and development	(1,376)	(1,214)	+13	+11
General and administration	(464)	(579)	–20	–20
Operating profit	**1,213**	**1,289**	**–6**	**–1**
– margin, % of sales	10.6	11.9	–1.3	–0.8
Core results[1]				
Sales	11,473	10,814	+6	+7
Royalties and other operating income	116	139	–17	–17
Cost of sales	(5,294)	(4,806)	+10	+11
Marketing and distribution	(2,645)	(2,544)	+4	+4
Research and development	(1,327)	(1,198)	+11	+9
General and administration	(402)	(458)	–12	–13
Core operating profit	**1,921**	**1,947**	**–1**	**+1**
– margin, % of sales	16.7	18.0	–1.3	–0.8
Financial position				
Net working capital	2,796	2,533	+10	+10
Long-term net operating assets	13,392	12,899	+4	+2
Net operating assets	**16,188**	**15,432**	**+5**	**+4**
Free cash flow				
Operating free cash flow	720	963	–25	–30
– margin, % of sales	6.3	8.9	–2.6	–3.1

1) See pages 137–140 for the definition of Core results and Core EPS.

Sales

Sale in the Diagnostics Division continued to increase with growth of 7% at CER to CHF 11.5 billion. Centralised and Point of Care Solutions (formerly named Professional Diagnostics), which makes up over half of the division's sales, was the main contributor with 9% sales growth, led by its immunodiagnostics business. Molecular Diagnostics sales increased by 7%, with an increase of 3% in the underlying molecular businesses as well as sales growth in the sequencing business from the Ariosa and Kapa acquisitions completed in 2015. Diabetes Care sales decreased by 4% due to the continued challenging market environment in North America. The growth in Tissue Diagnostics was driven by the advanced staining product portfolio.

Diagnostics Division – Sales by business area

Business area	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Centralised and Point of Care Solutions	6,698	6,175	+9	58	57
Diabetes Care	2,016	2,128	–4	18	20
Molecular Diagnostics	1,845	1,719	+7	16	16
Tissue Diagnostics	914	792	+14	8	7
Total sales	**11,473**	**10,814**	**+7**	**100**	**100**

Centralised and Point of Care Solutions. With an increase in sales of 9%, the business area was the major contributor to the divisional performance in all regions. Sales growth was primarily driven by the immunodiagnostics business (+13%) which now represents 30% of divisional sales. This was also supported by the clinical chemistry business (+6%). The Centralised and Point of Care Solutions business is growing well in the Asia-Pacific region (+18%) due to increased sales in China. The growth in the Europe, Middle East and Africa ('EMEA') region of 4% was mainly due to immunodiagnostics (+7%).

Centralised and Point of Care Solutions regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Europe, Middle East and Africa (EMEA)	2,488	2,411	+4	37	39
North America	1,444	1,327	+7	22	21
Rest of the World	2,766	2,437	+16	41	40
Total sales	**6,698**	**6,175**	**+9**	**100**	**100**

Diabetes Care. Sales decreased by 4%, primarily due to a fall in North America sales of 27%. The major factors behind this are a continued spill over in the US of Medicare prices reductions into commercial health plans, as well as lower demand in the US and reimbursement reductions in Canada for the blood glucose monitoring portfolio. The sales development in EMEA is mainly due to a decline in the UK, Germany and the Middle East, partially offset by growth in Russia. Sales growth in Latin America (+28%) was due to new tenders, volume growth and local inflationary effects.

Diabetes Care regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Europe, Middle East and Africa (EMEA)	1,258	1,285	–2	62	60
North America	285	383	–27	14	18
Rest of the World	473	460	+10	24	22
Total sales	**2,016**	**2,128**	**–4**	**100**	**100**

Molecular Diagnostics. Sales rose by 7%, with growth in the underlying molecular business of 3% as well as growth in the sequencing business. The growth in the molecular business came from the virology business, with sales in the blood screening business also increasing. This was partly offset by a sales decline in the biochemical reagent business following the outsourcing of distribution to a third party. Sales from the sequencing business grew following the Ariosa and Kapa acquisitions completed in 2015. Regionally, growth was driven by North America (+6%) and Asia-Pacific (+21%).

Molecular Diagnostics regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Europe, Middle East and Africa (EMEA)	668	650	+4	36	38
North America	725	671	+6	39	39
Rest of the World	452	398	+14	25	23
Total sales	**1,845**	**1,719**	**+7**	**100**	**100**

Tissue Diagnostics. Sales rose 14%, driven by 9% growth in the advanced staining portfolio. Companion diagnostics sales grew by 46%. In addition, sales grew by 21% in the primary staining business due to the launch of the new HE 600 instruments at the end of 2015. Regionally, growth was driven by North America (+14%) and EMEA (+12%). In both regions the growth was driven by the advanced staining portfolio. Sales in Asia-Pacific grew by 16%, with China as the main market.

Tissue Diagnostics regional sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Europe, Middle East and Africa (EMEA)	223	200	+12	24	25
North America	553	475	+14	61	60
Rest of the World	138	117	+15	15	15
Total sales	**914**	**792**	**+14**	**100**	**100**

Diagnostics Division – Sales by region

Region	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Europe, Middle East and Africa (EMEA)	4,637	4,546	+2	40	42
North America	3,007	2,856	+3	26	26
Asia-Pacific	2,559	2,239	+16	23	21
Latin America	792	760	+18	7	7
Japan	478	413	+2	4	4
Total sales	**11,473**	**10,814**	**+7**	**100**	**100**

In the EMEA region, the division's largest market, the sales increases were led by Centralised and Point of Care Solutions and Molecular Diagnostics. The sales growth in North America was driven by Centralised and Point of Care Solutions and by Tissue Diagnostics, partially offset by the decline of the Diabetes Care business, which was impacted by continued pricing pressure. The sales increase in Asia-Pacific was mainly in China (+22%) resulting from increasingly broad-based medical insurance coverage and public demand. In Latin America sales increased by 18% due to new tender business and local inflationary price increases. Sales growth in Japan was led by the Centralised and Point of Care Solutions business.

Diagnostics Division – Sales for E7 leading emerging markets

Country	2016 (CHF m)	2015 (CHF m)	% change (CER)	% of sales (2016)	% of sales (2015)
Brazil	234	200	+20	2	2
China	1,586	1,333	+22	14	12
India	139	127	+12	1	1
Mexico	122	120	+17	1	1
Russia	118	109	+15	1	1
South Korea	188	178	+6	2	2
Turkey	130	126	+12	1	1
Total sales	**2,517**	**2,193**	**+19**	**22**	**20**

Operating results

Diagnostics Division – Royalties and other operating income

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Royalty income	98	123	–22
Income from out-licensing agreements	3	1	+344
Income from disposal of products and other	15	15	+6
Total – IFRS and Core basis	**116**	**139**	**–17**

The decrease of 17% at CER was driven by lower royalty income, notably in Molecular Diagnostics, due to the base effect of back royalty payments in 2015 as well as expiry of a PCR technology patent.

Diagnostics Division – Cost of sales

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Manufacturing cost of goods sold and period costs	(5,127)	(4,589)	+12
Royalty expenses	(167)	(217)	–24
Cost of sales – Core basis	**(5,294)**	**(4,806)**	**+11**
Global restructuring plans	(100)	(96)	+4
Amortisation of intangible assets	(323)	(309)	+2
Impairment of intangible assets	(70)	0	–
Total – IFRS basis	**(5,787)**	**(5,211)**	**+11**

The increase in core costs came from an unfavourable product mix due to higher instrument placements and from higher costs from external suppliers. The core cost of sales ratio increased to 46.1% compared to 44.5% in 2015. Global restructuring costs were mainly related to site closures and initiatives to harmonise processes and systems.

Diagnostics Division – Marketing and distribution

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Marketing and distribution – Core basis	**(2,645)**	**(2,544)**	**+4**
Global restructuring plans	(102)	(116)	–12
Amortisation of intangible assets	(2)	0	–
Total – IFRS basis	**(2,749)**	**(2,660)**	**+3**

Core costs increased by 4% at CER, primarily due to increased spending in the Asia-Pacific region, mainly China, and in North America. There was also increased spend in the sequencing business. On a core basis, marketing and distribution costs as a percentage of sales decreased to 23.1% compared with 23.5% in 2015. Global restructuring costs were mainly from the reorganisation of the Diabetes Care business.

Diagnostics Division – Research and development

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Research and development – Core basis	**(1,327)**	**(1,198)**	**+9**
Global restructuring plans	(43)	(11)	+253
Amortisation of intangible assets	(6)	(5)	+39
Total – IFRS basis	**(1,376)**	**(1,214)**	**+11**

Core costs increased by 9% at CER, driven by spending in the Genia and Ariosa acquisitions in the sequencing business and the GeneWeave acquisition in the molecular diagnostics business, with key projects such as the Limelight platform, Harmony test and Cobas VivoDx system contributing to most of the increase. As a percentage of sales, research and development core costs increased to 11.6% from 11.1% in 2015.

Diagnostics Division – General and administration

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Administration	(494)	(431)	+14
Pensions – past service costs	77	0	–
Gains (losses) on disposal of property, plant and equipment	1	(1)	–
Business taxes and capital taxes	(18)	(39)	–52
Other general items	32	13	+144
General and administration – Core basis	**(402)**	**(458)**	**–13**
Global restructuring plans	(66)	(77)	–15
Alliances and business combinations	26	(39)	–
Legal and environmental cases	(28)	(7)	+288
Pensions – settlement gains (losses)	6	2	+197
Total – IFRS basis	**(464)**	**(579)**	**–20**

Core costs decreased by 13% at CER due to the income from Swiss pension plan changes in 2016. Excluding this, core costs increased by 4%. Administration costs grew by 14% due to the sequencing business and to newly established affiliates in the Diabetes Care business. Business taxes decreased because of the suspension of the Medical Device Excise Tax in the US. The income in other general items reflects underspending on IT and infrastructure areas. As a percentage of sales, core costs decreased to 3.5% from 4.2% in 2015.

Financial position

Diagnostics Division – Net operating assets

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)	Movement: Transactions (CHF m)	Movement: CTA (CHF m)
Trade receivables	3,023	2,872	+5	+4	117	34
Inventories	2,294	1,993	+15	+15	292	9
Trade payables	(1,024)	(895)	+14	+14	(121)	(8)
Net trade working capital	**4,293**	**3,970**	**+8**	**+7**	**288**	**35**
Other receivables/(payables)	(1,497)	(1,437)	+4	+3	(38)	(22)
Net working capital	**2,796**	**2,533**	**+10**	**+10**	**250**	**13**
Property, plant and equipment	5,873	5,250	+12	+12	611	12
Goodwill and intangible assets	8,459	8,623	–2	–4	(368)	204
Provisions	(950)	(947)	0	–2	16	(19)
Other long-term assets, net	10	(27)	–137	–126	36	1
Long-term net operating assets	**13,392**	**12,899**	**+4**	**+2**	**295**	**198**
Net operating assets	**16,188**	**15,432**	**+5**	**+4**	**545**	**211**

The absolute amount of the movement between the 2016 and 2015 consolidated balances reported in Swiss francs is split between actual 2016 transactions (translated at average rates for 2015) and the currency translation adjustment (CTA) that arises on consolidation. The 2016 transactions include non-cash movements and therefore the movements in this table are not the same as amounts the shown in the operating free cash flow (which only include the cash movements). A full consolidated balance sheet is given on page 41 of the Annual Financial Statements, and a reconciliation between that balance sheet and the information given above is on page 143.

Currency translation effects on balance sheet amounts. Compared to the start of the year the Swiss franc depreciated against the US dollar and the Brazilian real resulting in a positive translation impact on net operating assets. The Diagnostics Division does not have a significant net asset position in Japanese yen and so the depreciation of the Swiss franc against the Japanese yen had only a minor impact. The exchange rates used are given on page 27.

Net working capital. Net trade working capital increased by 7% at CER. Trade receivables increased mainly due to sales growth in the Asia-Pacific and Latin America regions. Inventories increased by 15% due to higher demand in emerging markets and due to preparation for new launches. Trade payables increased by 14% compared to the end of 2015 as a result of optimisation measures. The net liability for other receivables/payables increased due to increased employee benefit accruals.

Long-term net operating assets. The increase of 2% at CER was due to increased property, plant and equipment and decreased provisions offset by lower intangible assets. Property, plant and equipment grew by 12% due to instrument placements, manufacturing site expansion in China, the US and Germany, as well as site infrastructure development in Germany, US, China and Switzerland. Provisions decreased following the payment of milestones related to acquisitions. The 4% decrease in goodwill and intangible assets was mainly due to amortisation.

Free cash flow

Diagnostics Division – Operating free cash flow

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
Operating profit	**1,213**	**1,289**	**–6**	**–1**
– Depreciation, amortisation and impairment	1,374	1,188	+16	+15
– Provisions	38	32	+19	+20
– Equity compensation plans	69	53	+30	+30
– Other	95	108	–12	–14
Operating profit cash adjustments	**1,576**	**1,381**	**+14**	**+14**
Operating profit, net of operating cash adjustments	**2,789**	**2,670**	**+4**	**+7**
(Increase) decrease in net working capital	(430)	(180)	+139	+201
Investments in property, plant and equipment	(1,627)	(1,398)	+16	+17
Investments in intangible assets	(12)	(129)	–91	–91
Operating free cash flow	**720**	**963**	**–25**	**–30**
– as % of sales	6.3	8.9	–2.6	–3.1

For the definition of free cash flow and a detailed breakdown see pages 140–142.

The operating free cash flow of the Diagnostics Division was CHF 720 million compared to CHF 963 million in 2015. The cash generation of the business, measured by the operating profit net of operating cash adjustments, increased by 7% at CER due to the improving operating results. In addition, net working capital continued to increase, as noted above in the comments on the financial position, and this increase was significantly higher than the corresponding increase in 2015. Increased capital expenditure came from the expansion of manufacturing sites for immunochemistry and clinical chemistry products, notably in China and in Germany. In the US there were capital projects at the Indianapolis site for the manufacture of reagents and the new generation Diabetes Care strips. There was also further development of the division's headquarters in Switzerland. This was partially offset by lower investments in intangible assets compared to the same period in 2015. All these factors combined to give a decrease of 30% in the division's operating free cash flow relative to 2015.

Corporate operating results

Corporate operating results summary

	2016 (CHF m)	2015 (CHF m)	% change (CER)
Administration	(422)	(431)	–3
Pensions – past service costs	39	0	–
Business taxes and capital taxes	(17)	(13)	+32
Other general items	(10)	(16)	–19
General and administration costs – Core basis [1]	**(410)**	**(460)**	**–11**
Global restructuring plans	13	(6)	–
Alliances and business combinations	(1)	–	–
Legal and environmental cases	(31)	(5)	+464
Total costs – IFRS basis	**(429)**	**(471)**	**–11**
Financial position			
Net working capital	(104)	(108)	–4
Long-term net operating assets	(213)	(258)	–19
Net operating assets	**(317)**	**(366)**	**–14**
Free cash flow			
Operating free cash flow	(493)	(573)	–14

1) See pages 137–140 for the definition of Core results and Core EPS.

General and administration costs decreased by 11% at CER on a core basis, mainly due to the income from the changes in the Group's Swiss pension plans in 2016. Excluding this, core costs decreased by 2%. The increase in legal and environmental costs comes from the sale of the Nutley site in the US. The change in net operating assets was due to the utilisation of provisions for environmental remediation activities at Nutley and at Grenzach, Germany. Corporate operating free cash flow showed a smaller outflow mainly due to the gain on proceeds for the Nutley site.

Foreign exchange impact on operating results

The Group's exposure to movements in foreign currencies affecting its operating results, as expressed in Swiss francs, is summarised by the following key figures and comments.

Growth (reported at CER and in CHF)

	% change (CER)		% change (CHF)	
	2016	2015	2016	2015
Pharmaceuticals Division				
Sales	+3	+5	+5	+2
Core operating profit	+4	+5	+5	0
Diagnostics Division				
Sales	+7	+6	+6	0
Core operating profit	+1	–2	–1	–7
Group				
Sales	+4	+5	+5	+1
Core operating profit	+4	+5	+5	–1

Exchange rates against the Swiss franc

	31 December 2016	Average 2016	31 December 2015	Average 2015
1 USD	1.02	0.99	0.99	0.96
1 EUR	1.07	1.09	1.08	1.07
100 JPY	0.88	0.91	0.82	0.80

In 2016 compared to 2015, the Swiss franc was weaker against a number of currencies, in particular the Japanese yen, the US dollar and the euro. The appreciation of the major currencies relevant to the Group resulted in a total positive foreign exchange impact on the income statement compared to a negative impact in 2015. For 2016 sales these developments resulted in a positive impact of 1 percentage point, equivalent to CHF 0.6 billion. The currency translation gain on the operating profit is 1 percentage point mainly from the appreciation of the Japanese yen and the US dollar. The sensitivity of Group sales and core operating profit to a 1% change in average foreign currency exchange rates against the Swiss franc during 2016 is shown in the table below.

Currency sensitivities

Impact of 1% change in average exchange rate versus the Swiss franc	Sales (CHF m)	Core operating profit (CHF m)
US dollar	223	93
Euro	96	45
Japanese yen	42	21
All other currencies	127	66

The Group's revenues are primarily generated from sales of products to customers. Such revenues are mainly received in the local currency of the customer's home market, although in certain emerging markets invoicing is made in major international currencies such as the US dollar and euro. The costs of sales and marketing and also some administration costs follow the same currency pattern as sales. The majority of research and development activities are incurred at the Group's global research facilities, and therefore the costs are mainly concentrated in US dollars, Swiss francs and euros. General and administration costs tend to be incurred mainly at central locations in the US, Switzerland and Germany. Chugai's revenues and costs are denominated in Japanese yen.

Treasury and taxation results

Treasury and taxation results

	2016 (CHF m)	2015 (CHF m)	% change (CHF)	% change (CER)
IFRS results				
Operating profit	14,069	13,821	+2	+1
Financing costs	(1,099)	(1,574)	–30	–31
Other financial income (expense)	37	(260)	–	–
Profit before taxes	**13,007**	**11,987**	**+9**	**+8**
Income taxes	(3,274)	(2,931)	+12	+10
Net income	**9,733**	**9,056**	**+7**	**+7**
Attributable to				
– Roche shareholders	9,576	8,863	+8	+8
– Non-controlling interests	157	193	–19	–30
Core results[1]				
Operating profit	18,420	17,542	+5	+4
Financing costs	(1,034)	(1,140)	–9	–10
Other financial income (expense)	37	(276)	–	–
Profit before taxes	**17,423**	**16,126**	**+8**	**+7**
Income taxes	(4,735)	(4,289)	+10	+9
Net income	**12,688**	**11,837**	**+7**	**+7**
Attributable to				
– Roche shareholders	12,507	11,626	+8	+7
– Non-controlling interests	181	211	–14	–25
Financial position – Treasury and taxation				
Net debt	(13,248)	(14,080)	–6	–9
Pensions	(6,940)	(7,699)	–10	–10
Income taxes	(390)	(523)	–25	–38
Financial non-current assets	536	321	+67	+66
Derivatives, net	(262)	(470)	–44	–43
Collateral, net	302	454	–33	–33
Interest payable	(289)	(445)	–35	–36
Other non-operating assets, net	66	60	+10	+8
Total net assets (liabilities)	**(20,225)**	**(22,382)**	**–10**	**–12**
Free cash flow – Treasury and taxation[2]				
Treasury activities	(1,218)	(870)	+40	+41
Taxes paid	(3,738)	(3,696)	+1	–1
Total	**(4,956)**	**(4,566)**	**+9**	**+7**

1) See pages 137–140 for the definition of Core results and Core EPS.
2) The Group has refined the calculation of free cash flow in 2016 to exclude dividends, in line with its peer group. The free cash flow for 2015 has been restated accordingly.

Financing costs

Financing costs were 31% lower on an IFRS basis due to a loss in the comparative period of CHF 381 million from a major debt restructuring. Core financing costs were CHF 1.0 billion, a decrease of 10% at CER compared to 2015. Interest expenses (including amortisation of debt discounts and issue costs) decreased by 20% to CHF 707 million due to the continued repayment and refinancing of debt leading to a lower weighted average cost of debt. The loss on early redemption of debt was CHF 142 million compared to CHF 79 million in 2015. The net interest cost of defined benefit pension plans increased by 4% at CER to CHF 186 million due to higher discount rates in the US and Germany at the end of 2015. A full analysis of financing costs is given in Note 3 to the Annual Financial Statements and details of the debt repayments and redemptions are given in Note 20.

Other financial income (expense)

Other financial income (expense) was a net income CHF 37 million compared to a net expense of CHF 260 million in 2015. Net income from equity securities was CHF 154 million as against CHF 134 million in the comparative period. The net foreign exchange results reflect hedging costs and losses on unhedged positions. Net foreign exchange losses in 2016 were CHF 124 million compared to net losses of CHF 386 million in 2015. The 2015 results included foreign exchange losses of CHF 254 million for Venezuela and CHF 105 million for Argentina. A full analysis of other financial income (expense) is given in Note 3 to the Annual Financial Statements.

Income taxes

The Group's effective tax rate was 25.2% compared to 24.5% in 2015 on an IFRS basis and 27.2% compared to 26.6% on a core basis. This was largely due to the deferred tax impact resulting from tax rate changes. The IFRS results include non-core income from the release of contingent consideration provisions that is not taxable, hence the net tax effect in 2016 of the 'Alliances and business combinations' line in the table below. This positive impact was mostly offset by the unfavourable deferred tax impact from equity compensation plans.

Analysis of the Group's effective tax rate

	2016			2015		
	Profit before tax (CHF m)	Income taxes (CHF m)	Tax rate (%)	Profit before tax (CHF m)	Income taxes (CHF m)	Tax rate (%)
Group's effective tax rate – Core basis	**17,423**	**(4,735)**	**27.2**	**16,126**	**(4,289)**	**26.6**
Global restructuring plans	(1,235)	270	21.9	(1,063)	195	18.3
Goodwill and intangible assets	(3,291)	1,233	37.5	(1,741)	838	48.1
Alliances and business combinations	181	41	–22.7	(777)	183	23.6
Legal and environmental cases	(87)	30	34.5	(182)	40	22.0
Major debt restructuring	–	–	–	(381)	133	34.9
Normalisation of equity compensation plan tax benefit	–	(108)	–	–	(30)	–
Other	16	(5)	31.3	5	(1)	20.0
Group's effective tax rate – IFRS basis	**13,007**	**(3,274)**	**25.2**	**11,987**	**(2,931)**	**24.5**

Financial position

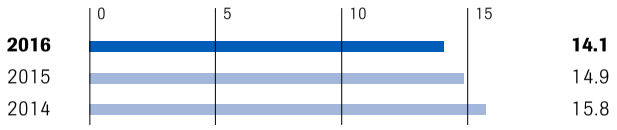
Net debt decreased to CHF 13.2 billion, as the free cash flow was larger than dividends paid and transactions in own equity instruments. The net pension liabilities decreased by 10% to CHF 6.9 billion due to improved asset performance and additional pension contributions, which more than offset lower discount rates in all regions. The net tax liabilities decreased mainly due to the deferred tax impact from the impairment of intangible assets, partially offset by the deferred tax effects of the decreased net pension liabilities and the deferred tax effects of equity compensation plans that are variable according to the price of the underlying equity. At 31 December 2016 the Group held financial long-term assets with a market value of CHF 0.5 billion, which consist mostly of holdings in biotechnology and other pharmaceuticals companies acquired as part of licensing transactions or scientific collaborations. Compared to the start of the year the Swiss franc depreciated against the US dollar, which had a negative translation impact on the Group's US dollar-denominated debt.

Free cash flow

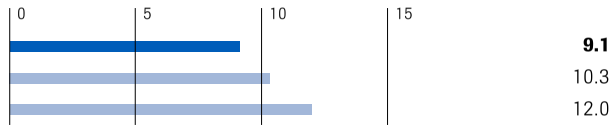
The cash outflow from treasury activities increased to CHF 1.2 billion due to additional pension contributions in Switzerland, the US and Ireland, and due to strategic investments, partly offset by lower interest payments. Total taxes paid in 2016 were stable at CHF 3.7 billion. The Group has refined the calculation of free cash flow in 2016 to exclude dividends in line with its peer group. The free cash flow for 2015 and 2014 has been restated accordingly.

Cash flows and net debt

Operating free cash flow in billions of CHF



Free cash flow in billions of CHF



Free cash flow in millions of CHF

	Pharmaceuticals	Diagnostics	Corporate	Group
2016				
Operating profit – IFRS basis	13,285	1,213	(429)	14,069
Operating profit cash adjustments	4,659	1,576	(50)	6,185
Operating profit, net of operating cash adjustments	**17,944**	**2,789**	**(479)**	**20,254**
(Increase) decrease in net working capital	(586)	(430)	(7)	(1,023)
Investments in property, plant and equipment	(2,510)	(1,627)	(7)	(4,144)
Investments in intangible assets	(989)	(12)	0	(1,001)
Operating free cash flow	**13,859**	**720**	**(493)**	**14,086**
Treasury activities				(1,218)
Taxes paid				(3,738)
Free cash flow				**9,130**
2015				
Operating profit – IFRS basis	13,003	1,289	(471)	13,821
Operating profit cash adjustments	4,314	1,381	(103)	5,592
Operating profit, net of operating cash adjustments	**17,317**	**2,670**	**(574)**	**19,413**
(Increase) decrease in net working capital	(260)	(180)	9	(431)
Investments in property, plant and equipment	(2,062)	(1,398)	(8)	(3,468)
Investments in intangible assets	(513)	(129)	0	(642)
Operating free cash flow	**14,482**	**963**	**(573)**	**14,872**
Treasury activities				(870)
Taxes paid				(3,696)
Free cash flow				**10,306**

For the definition of free cash flow and a detailed breakdown see pages 140–142.
The Group has refined the calculation of free cash flow in 2016 to exclude dividends, in line with its peer group. The free cash flow for 2015 has been restated accordingly.

Operating free cash flow decreased by 7% at CER to CHF 14.1 billion. The underlying cash generated from operations increased to CHF 20.3 billion, but was offset by higher capital expenditure, an increase in net working capital and higher investments in intangible assets.

The cash outflow from treasury activities increased to CHF 1.2 billion due to higher pension contributions and investments in financial long-term assets, partly offset by lower interest payments. Taxes paid were stable at CHF 3.7 billion. The free cash flow of CHF 9.1 billion was lower than in 2015 due to the lower operating free cash flow and higher pension contributions.

The Group has refined the calculation of free cash flow in 2016 to exclude dividends, in line with its peer group. The free cash flow for 2015 has been restated accordingly, resulting in an increase of CHF 6,954 million to the free cash flow for that period. There was no impact on the operating free cash flow from this change.

Net debt in millions of CHF

At 1 January 2016	
Cash and cash equivalents	3,731
Marketable securities	5,440
Long-term debt	(17,100)
Short-term debt	(6,151)
Net debt at beginning of period	**(14,080)**
Change in net debt during 2016	
Free cash flow	9,130
Dividend payments	(7,040)
Transactions in own equity instruments	(557)
Business combinations, net of divestments of subsidiaries	(74)
Hedging and collateral arrangements	(211)
Currency translation, fair value and other movements	(416)
Change in net debt	**832**
At 31 December 2016	
Cash and cash equivalents	4,163
Marketable securities	4,944
Long-term debt	(16,992)
Short-term debt	(5,363)
Net debt at end of period	**(13,248)**

For the definition of net debt see page 144.

Net debt – currency profile in millions of CHF

	Cash and marketable securities 2016	Cash and marketable securities 2015	Debt 2016	Debt 2015
US dollar[1]	1,106	1,494	(16,073)	(17,464)
Euro	2,986	2,986	(2,852)	(2,175)
Swiss franc	2,411	2,170	(2,605)	(2,598)
Japanese yen	1,656	1,813	(6)	(6)
Pound sterling	271	320	(249)	(291)
Other	677	388	(570)	(717)
Total	**9,107**	**9,171**	**(22,355)**	**(23,251)**

1) US dollar-denominated debt includes those bonds and notes denominated in euros that were swapped into US dollars, and therefore in the consolidated results they have economic characteristics equivalent to US dollar-denominated bonds and notes.

The net debt position of the Group at 31 December 2016 was CHF 13.2 billion, a decrease of CHF 0.8 billion from 31 December 2015. The free cash flow was largely used for the annual dividend payment of CHF 7.0 billion.

The issuance, redemption and repurchase of bonds and notes during 2016 (see Note 20 to the Annual Financial Statements) had an impact on liquid funds, but had no impact on the net debt position.

Contractual obligations and commitments

The Group has obligations and commitments, as set out in the table below. Carrying values are as shown in the consolidated balance sheet. The potential obligations shown are not discounted and are not risk adjusted. Any foreign currency denominated amounts are translated into Swiss francs at the 31 December 2016 exchange rates.

Contractual obligations and commitments as at 31 December 2016 in millions of CHF

	Potential obligation (undiscounted)					
	Less than 1 year	1–2 years	2–5 years	Over 5 years	Total	Carrying value
On-balance sheet						
Debt [20]						
– Bonds and notes	3,280	2,189	6,768	12,960	25,197	19,644
– Other debt	2,706	1	4	–	2,711	2,711
Contingent consideration provisions [19 29]	480	298	1,061	1,035	2,874	1,089
Accounts payable [16]	3,375	–	–	–	3,375	3,375
Derivative financial instruments [18]	210	10	225	2	447	447
Unfunded defined benefit plans [25]	152	160	522	6,280	7,114	4,931
Total on-balance sheet commitments	**10,203**	**2,658**	**8,580**	**20,277**	**41,718**	**32,197**
Off-balance sheet						
Capital commitments for property, plant and equipment [7]	1,184	188	1	–	1,373	0
Operating leases [7]	311	243	421	188	1,163	0
Contract manufacturing commitments [29]	354	243	395	362	1,354	0
Alliance collaboration commitments [9]	427	678	615	436	2,156	0
Total off-balance sheet commitments	**2,276**	**1,352**	**1,432**	**986**	**6,046**	**0**
Total contractual commitments	**12,479**	**4,010**	**10,012**	**21,263**	**47,764**	**32,197**

References are to the Notes in the Consolidated Financial Statements.

Debt. This consists mainly of bonds and notes and includes the principal and interest on the Group's debt instruments. Other debt is mainly commercial paper. The carrying values are discounted based on the interest rates inherent in the instruments.

Contingent consideration provisions. These are potential payments arising from business combinations. The carrying values are risk-adjusted and discounted.

Unfunded defined benefit plans. These are mainly the pension plans in the Group's German affiliates, where the fully reserved pension obligations are invested in the local affiliate's operations. The carrying values are discounted. Future company contributions to the Group's funded plans are not shown in the above table.

Capital commitments for property, plant and equipment. These are non-cancellable commitments for the purchase and construction mainly at the Roche sites in Basel (Switzerland), Mannheim (Germany) and South San Francisco (US) and also at the Chugai sites.

Operating leases. These are the future obligations under non-cancellable lease contracts. In 2019 the Group will implement IFRS 16 'Leases' and at that point these obligations will be reported in the balance sheet.

Contract manufacturing commitments. These are the future minimum take-or-pay commitments to purchase inventories arising from the Group's major long-term agreements with external Contract Manufacturing Organisations ('CMOs').

Alliance collaboration commitments. These are potential upfront and milestone payments that may become due from the Group's in-licensing arrangements. Potential payments to alliance partners and for asset deals within the next three years are included assuming all projects currently in development are successful. Payments beyond a three year time are only included for asset deals.

Provisions for legal and environmental matters. These are not included in the above table as the timing and amount of any cash outflow is uncertain and contingent on the development of the matters in question.

Pensions and other post-employment benefits

Post-employment benefit plans are classified for IFRS as 'defined contribution plans' if the Group pays fixed contributions into a separate fund or to a third-party financial institution and will have no further legal or constructive obligation to pay further contributions. In 2016 expenses for the Group's defined contribution plans were CHF 473 million (2015: CHF 421 million). All other plans are classified as 'defined benefit plans', even if the Group's potential obligation is minor or has a relatively remote possibility of arising. Plans are usually established as trusts which are independent of the Group and are funded by payments from the Group and by employees, but in some cases the plan is unfunded and the Group pays pensions to retired employees directly from its own financial resources.

Defined benefit plans

During 2016 operating income of CHF 426 million was recorded for past service costs from changes to the Group's pension plans in Switzerland. This represents the impact of the adjustment of the pension liability for the plan changes. Excluding this, expenses for the Group's defined benefit plans were CHF 718 million (2015: CHF 709 million). Based on the revised actuarial assumptions at the end of 2016, expenses for the Group's defined benefit plans in 2017 are expected to be approximately CHF 675 million driven by lower discount rates at the beginning of 2017. These estimates for 2017 pension expenses do not include any settlement or past service/curtailment effects that might arise during the year.

Funding status and balance sheet position

	2016 (CHF m)	2015 (CHF m)
Funded plans		
– Fair value of plan assets	13,571	12,363
– Defined benefit obligation	(15,734)	(15,629)
Over (under) funding	**(2,163)**	**(3,266)**
Unfunded plans		
– Defined benefit obligation	(4,931)	(4,544)
Total funding status	**(7,094)**	**(7,810)**
Limit on asset recognition	0	(14)
Reimbursement rights	154	125
Net recognised asset (liability)	**(6,940)**	**(7,699)**

Overall the funding status on an IFRS basis of the Group's funded defined benefit plans increased to 86% compared to 79% at the start of the year. Plan assets increased by CHF 1.2 billion mainly driven by higher returns on assets and additional contributions paid into the Group's pension plans in Switzerland, the US and Ireland. The increase in the defined benefit obligation arising from a decrease in discount rates in all regions since the end of 2015, mostly offset by the changes to the Group's Swiss plans, which decreased the defined benefit obligation by CHF 426 million. The funded status of the pension funds is monitored by the local pension fund governance bodies as well as being closely reviewed at a Group level. During 2016 additional contributions were paid into the Group's pension plans in Switzerland, the US and Ireland. The total cash outflow from the Group's defined benefit plans in 2016 was CHF 880 million compared to CHF 538 million in 2015.

The unfunded plans are mainly those in the Group's German affiliates, where the fully reserved pension obligations are invested in the local affiliate's operations. The unfunded liabilities for these plans increased by CHF 0.4 billion during 2016 due to a decrease in the discount rate in Germany.

Full details of the Group's pensions and other post-employment benefits are given in Note 25 to the Annual Financial Statements.

Roche shares

Share price and market capitalisation (at 31 December)

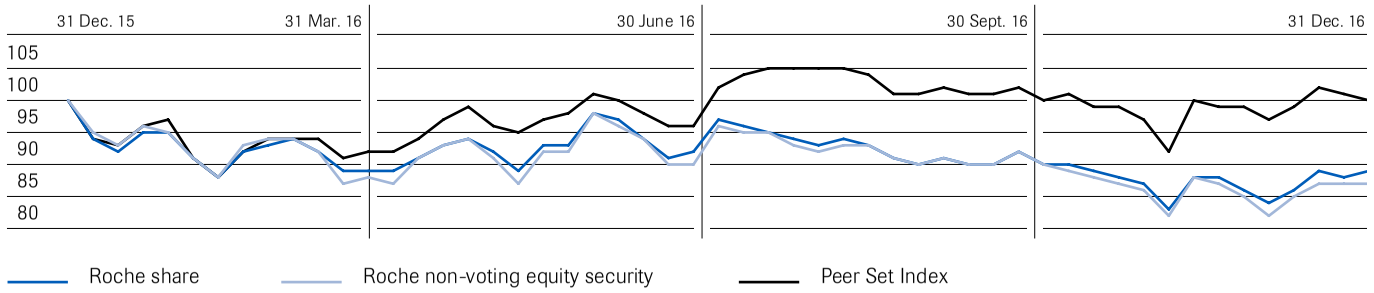
	2016	2015	% change (CHF)
Share price (CHF)	238.00	276.75	–14
Non-voting equity security *(Genussschein)* price (CHF)	232.60	276.40	–16
Market capitalisation (billions of CHF)	199	236	–16

In 2016 Roche ranked number 13 among a peer group consisting of Roche and 15 other healthcare companies[1] for Total Shareholder Return (TSR), defined as share price growth plus dividends, measured in Swiss francs at actual exchange rates. At constant exchange rates (CER) Roche ranked number 13, with the year-end return being minus 11% for Roche shares and minus 13% for Roche non-voting equity securities. The combined performance of share and non-voting equity security was minus 13% compared to a weighted average return for the peer group of 0% in CHF terms and +1% at CER.

The healthcare sector underperformed other key markets in 2016 with specific investor concerns around pricing pressure, US pricing reforms and elections. The Swiss Market Index also underperformed in 2016 relative to other major global indices as investors reduced exchange rate exposure to Swiss equities driven by the strengthening US dollar. In this context, despite the positive news flow over the year and strong late stage pipeline, Roche shares were overshadowed by the anticipation of a key trial readout expected in early 2017 and uncertainty over the impact of biosimilars.

1) Peer group for 2016: Abbott, AbbVie, Amgen, Astellas, AstraZeneca, Bayer, Bristol-Myers Squibb, GlaxoSmithKline, Johnson & Johnson, Lilly, Merck & Co., Novartis, Pfizer, Roche, Sanofi and Takeda.

Total Shareholder Return development



Source: Datastream. Data for Roche and the peer index has been re-based to 100 at 1 January 2016. The Peer Index was converted into Swiss francs at daily actual exchange rates. Currency fluctuations have an influence on the representation of the relative performance of Roche versus the peer index.

Proposed dividend

The Board of Directors is proposing an increase of 1% in the dividend for 2016 to CHF 8.20 per share and non-voting equity security (2015: CHF 8.10) for approval at the Annual General Meeting. This is the 30th consecutive increase in the dividend. If the dividend proposal is approved by shareholders, dividend payments on the total shares and non-voting equity securities will amount to CHF 7.1 billion (2015: CHF 7.0 billion), resulting in a pay-out ratio (based on core net income) of 56.4% (2015: 60.0%). Based on the prices at year-end 2016, the dividend yield on the Roche share was 3.4% (2015: 2.9%) and the yield on the non-voting equity security was 3.5% (2015: 2.9%). Further information on the Roche securities is given on pages 145 to 146.

Information per share and non-voting equity security

	2016 (CHF)	2015 (CHF)	% change (CHF)
EPS – Basic	11.24	10.42	+8
EPS – Diluted	11.13	10.28	+8
Core EPS – Basic	14.68	13.66	+7
Core EPS – Diluted	14.53	13.49	+8
Equity attributable to Roche shareholders per share	28.07	24.62	+14
Dividend per share	8.20	8.10	+1

For further details please refer to Notes 21 and 27 of the Annual Financial Statements and page 140. The pay-out ratio is calculated as dividend per share divided by core earnings per share.

Debt

Debt redemptions. During 2016 there were the following redemptions:
- The early partial redemption of USD 600 million of notes originally due 1 March 2019 that were redeemed on 24 March 2016 following the exercise of an early-call option in December 2015
- The redemption on the due date of 4 March 2016 of EUR 2.1 billion of notes
- The early redemption of USD 857 million of notes originally due 1 March 2019 that were redeemed on 25 August 2016 following the exercise of an early-call option in June 2016.

In addition on 19 December 2016 the Group completed a tender offer to repurchase USD 80 million 7.0% fixed rate notes due 1 March 2039.

Debt issuances. During 2016 there were the following issuances:
- On 26 February 2016 the Group issued EUR 650 million of notes due on 27 February 2023.
- On 1 March 2016 the Group issued USD 1.0 billion of notes due on 15 May 2026.
- On 31 October 2016 the Group issued USD 650 million of notes due on 28 January 2022 and USD 850 million of notes due on 28 January 2027.

All the above transactions are further described in Note 20 to the Annual Financial Statements.

The maturity schedule of the Group's bonds and notes outstanding at 31 December 2016 is shown in the table below.

Bonds and notes: nominal amounts at 31 December 2016 by contractual maturity

	US dollar (USD m)	Euro (EUR m)	Pound sterling (GBP m)	Swiss franc (CHF m)	Total[1] (USD m)	Total[1] (CHF m)
2017	1,150	–	–	1,500	2,616	2,676
2018	–	1,000	–	600	1,636	1,673
2019	2,000	–	–	–	2,000	2,046
2020	600	–	–	–	600	614
2021	1,300	1,317[2]	–	–	2,681	2,743
2022–2026	4,300	1,650	200	500	6,765	6,920
2027 and beyond	3,014	–	–	–	3,014	3,083
Total	**12,364**	**3,967**	**200**	**2,600**	**19,312**	**19,755**

1) Total translated at 31 December 2016 exchange rates.
2) Of the proceeds from these bonds and notes, EUR 1.2 billion have been swapped into US dollars, and therefore in the consolidated results these bonds and notes have economic characteristics equivalent to US dollar-denominated bonds and notes.

The Group plans to meet its debt obligations using existing liquid funds as well as cash generated from business operations. In 2016 the free cash flow was CHF 9.1 billion, which included the cash generated from operations, as well as payment of interest and tax. For short-term financing requirements, the Group has a commercial paper programme in the US under which it can issue up to USD 7.5 billion of unsecured commercial paper notes and has committed credit lines of USD 7.5 billion available as back-stop lines. Commercial paper notes totalling USD 2.1 billion were outstanding as of 31 December 2016 (31 December 2015: USD 2.5 billion). For longer-term financing the Group maintains strong long-term investment-grade credit ratings of AA by Standard & Poor's and A1 by Moody's which should facilitate efficient access to international capital markets.

Further information on the Group's debt is given in Note 20 to the Annual Financial Statements.

Credit ratings for the Roche Group at 31 December 2016

	Short-term	Long-term	Outlook
Moody's	P-1	A1	Stable
Standard & Poor's	A-1+	AA	Stable

Financial risks

At 31 December 2016 the Group has a net debt position of CHF 13.2 billion (2015: CHF 14.1 billion). The financial assets of the Group are managed in a conservative way with the objective to meet the Group's financial obligations at all times.

Asset allocation. A considerable portion of the cash and marketable securities the Group currently holds is being used for debt redemptions. Liquid funds are either held as cash or are invested in high-quality, investment-grade fixed income securities with an investment horizon to meet those liquidity requirements.

Cash and marketable securities

	2016 (CHF m)	2016 (% of total)	2015 (CHF m)	2015 (% of total)
Cash and cash equivalents	4,163	46	3,731	41
Money market instruments	3,366	36	3,945	43
Debt securities	1,509	17	1,390	15
Equity securities	69	1	105	1
Total cash and marketable securities	**9,107**	**100**	**9,171**	**100**

Credit risk. Credit risk arises from the possibility that counterparties to transactions may default on their obligations causing financial losses for the Group. The rating profile of the Group's CHF 9.0 billion of cash and fixed income marketable securities remained strong with 93% being invested in the A-AAA range. The Group has signed netting and collateral agreements with the counterparties in order to mitigate counterparty risk on derivative positions.

The Group has trade receivables of CHF 9.4 billion. Since the beginning of 2010 there have been financial difficulties in Southern European countries, notably Spain, Italy, Greece and Portugal. The Group is a leading supplier to the healthcare sectors in these countries and at 31 December 2016 has trade receivables of EUR 0.5 billion (CHF 0.5 billion) with public customers in these countries. This is a decrease of 27% compared to 31 December 2015 in euro terms due to the substantial collections in late 2016. The Group uses different measures to improve collections in these countries, including intense communication with customers, forfaiting, negotiations of payment plans, charging of interest for late payments, and legal actions. Strict commercial policies are in place with selected hospitals in Greece and Italy. Accounts with hospitals in Spain and Portugal are closely monitored. Since 2011 the Group's trade receivables balance in Southern Europe has decreased by 63% in EUR terms.

Liquidity risk. Liquidity risk arises through a surplus of financial obligations over available financial assets due at any point in time. The Group's approach to liquidity risk is to maintain sufficient readily available reserves in order to meet its liquidity requirements at any point in time. In addition to the current liquidity position, the Group has good cash generation ability. Those future cash flows will be used to repay debt instruments in the coming years.

The Group enjoys strong long-term investment-grade credit ratings of AA by Standard & Poor's and A1 by Moody's. At the same time Roche is rated at the highest available short-term ratings by those agencies. In the event of financing requirements, the ratings and overall creditworthiness of the Roche Group should permit efficient access to international capital markets, including the commercial paper market. The Group has committed credit lines with various financial institutions totalling CHF 8.0 billion of which CHF 7.7 billion serve as back-stop lines for the commercial paper programme. As at 31 December 2016 no debt has been drawn under these credit lines.

Market risk. Market risk arises from changing market prices of the Group's financial assets or financial liabilities. The exposures are predominantly related to changes in interest rates, foreign exchange rates and equity prices. The Group uses Value-at-Risk (VaR) to assess the impact of market risk on its financial instruments. VaR data indicates the value range within which a given financial instrument will fluctuate with a pre-set probability as a result of movements in market prices. The Group's VaR increased mainly due to a gradual increase in long-term interest rates in major economies in 2016.

Interest rate risk. Interest rate risk arises from movements in interest rates which could affect the Group financial result or the value of the Group equity. The Group may use interest rate derivatives to manage its interest-rate-related exposure and financial result.

Further information on financial risk management and financial risks and the VaR methodology is included in Note 29 to the Annual Financial Statements.

International Financial Reporting Standards

The Roche Group has been using International Financial Reporting Standards (IFRS) to report its consolidated results since 1990. In 2016 the Group has implemented various minor amendments to existing standards and interpretations, which have no material impact on the Group's overall results and financial position.

The Group is currently assessing the potential impacts of the various new and revised standards and interpretations that will be mandatory from 1 January 2017 which the Group has not yet applied. Based on the analysis to date, the Group does not anticipate that these will have a material impact on the Group's overall results and financial position.

The Group is also assessing other new and revised standards which are not mandatory until after 2017, as summarised below. See Note 32 to the Annual Financial Statements for further details.

IFRS 9 'Financial Instruments'. The Group plans to implement the new standard effective 1 January 2018. The Group does not currently anticipate that the comparative 2017 results will be restated when the new standard is applied. The standard deals with the classification, recognition and measurement (including impairment) of financial instruments, the impairment of financial assets, including trade and lease receivables and also introduces a new hedge accounting model.

IFRS 15 'Revenues from Contracts with Customers'. The Group plans to implement the new standard effective 1 January 2018. The Group does not anticipate that the new standard will change the amounts of revenue recognised for 2017 and therefore then no restatement should be necessary. The new standard contains a new set of principles on when and how to recognise and measure revenue as well as new requirements related to presentation. The core principle in that framework is that revenue should be recognised dependent on the transfer of promised goods or services to the customer for an amount that reflects the consideration to which should be received in exchange for those goods or services.

IFRS 16 'Leases'. The Group plans to implement the new standard effective 1 January 2019 and will apply the cumulative catch-up method option for the transition, meaning that the comparative 2018 results will not be restated when the new standard is applied. The main impact of the new standard will be to bring operating leases on-balance sheet. The Group is assessing the potential impact, but currently anticipates that the new standard will result in the carrying value of property, plant and equipment being increased by at least CHF 1 billion, with debt increased by a similar amount at the date of implementation. The application of the new standard will result in part of what is currently reported as operating lease costs being recorded as interest expenses. Given the leases involved and the prevailing low interest rate environment the Group does not currently expect this effect to be material.

Roche Group Consolidated Financial Statements

Roche Group consolidated income statement for the year ended 31 December 2016 in millions of CHF

	Pharmaceuticals	Diagnostics	Corporate	Group
Sales [2]	**39,103**	**11,473**	**–**	**50,576**
Royalties and other operating income [2]	1,944	116	–	2,060
Cost of sales	(10,393)	(5,787)	–	(16,180)
Marketing and distribution	(6,391)	(2,749)	–	(9,140)
Research and development [2]	(10,156)	(1,376)	–	(11,532)
General and administration	(822)	(464)	(429)	(1,715)
Operating profit [2]	**13,285**	**1,213**	**(429)**	**14,069**
Financing costs [3]				(1,099)
Other financial income (expense) [3]				37
Profit before taxes				**13,007**
Income taxes [4]				(3,274)
Net income				**9,733**
Attributable to				
– Roche shareholders [21]				9,576
– Non-controlling interests [23]				157
Earnings per share and non-voting equity security [27]				
Basic (CHF)				11.24
Diluted (CHF)				11.13

Roche Group consolidated income statement for the year ended 31 December 2015 in millions of CHF

	Pharmaceuticals	Diagnostics	Corporate	Group
Sales [2]	**37,331**	**10,814**	**–**	**48,145**
Royalties and other operating income [2]	2,119	139	–	2,258
Cost of sales	(10,249)	(5,211)	–	(15,460)
Marketing and distribution	(6,154)	(2,660)	–	(8,814)
Research and development [2]	(8,367)	(1,214)	–	(9,581)
General and administration	(1,677)	(579)	(471)	(2,727)
Operating profit [2]	**13,003**	**1,289**	**(471)**	**13,821**
Financing costs [3]				(1,574)
Other financial income (expense) [3]				(260)
Profit before taxes				**11,987**
Income taxes [4]				(2,931)
Net income				**9,056**
Attributable to				
– Roche shareholders [21]				8,863
– Non-controlling interests [23]				193
Earnings per share and non-voting equity security [27]				
Basic (CHF)				10.42
Diluted (CHF)				10.28

Roche Group consolidated statement of comprehensive income in millions of CHF

	Year ended 31 December	
	2016	2015
Net income recognised in income statement	**9,733**	**9,056**
Other comprehensive income		
Remeasurements of defined benefit plans [21]	174	229
Items that will never be reclassified to the income statement	**174**	**229**
Available-for-sale investments [21]	20	(6)
Cash flow hedges [21]	55	(55)
Currency translation of foreign operations [21]	496	(1,007)
Items that are or may be reclassified to the income statement	**571**	**(1,068)**
Other comprehensive income, net of tax	**745**	**(839)**
Total comprehensive income	**10,478**	**8,217**
Attributable to		
– Roche shareholders [21]	10,193	8,051
– Non-controlling interests [23]	285	166
Total	**10,478**	**8,217**

Roche Group consolidated balance sheet in millions of CHF

	31 December 2016	31 December 2015	31 December 2014
Non-current assets			
Property, plant and equipment [7]	19,957	18,473	17,195
Goodwill [5 8]	11,282	11,082	9,930
Intangible assets [5 9]	12,046	13,861	12,799
Deferred tax assets [4]	2,826	2,564	2,829
Defined benefit plan assets [25]	738	642	691
Other non-current assets [14]	1,300	959	982
Total non-current assets	**48,149**	**47,581**	**44,426**
Current assets			
Inventories [10]	7,928	7,648	7,743
Accounts receivable [11]	8,760	8,329	9,003
Current income tax assets [4]	335	239	244
Other current assets [15]	2,540	2,795	2,421
Marketable securities [12]	4,944	5,440	7,961
Cash and cash equivalents [13]	4,163	3,731	3,742
Total current assets	**28,670**	**28,182**	**31,114**
Total assets	**76,819**	**75,763**	**75,540**
Non-current liabilities			
Long-term debt [20]	(16,992)	(17,100)	(19,347)
Deferred tax liabilities [4 5]	(838)	(545)	(504)
Defined benefit plan liabilities [25]	(7,678)	(8,341)	(8,994)
Provisions [19]	(1,777)	(2,204)	(1,778)
Other non-current liabilities [17]	(532)	(505)	(251)
Total non-current liabilities	**(27,817)**	**(28,695)**	**(30,874)**
Current liabilities			
Short-term debt [20]	(5,363)	(6,151)	(6,367)
Current income tax liabilities [4]	(2,713)	(2,781)	(2,616)
Provisions [19]	(2,271)	(2,432)	(2,465)
Accounts payable [16]	(3,375)	(3,207)	(2,883)
Other current liabilities [18]	(8,878)	(9,197)	(8,777)
Total current liabilities	**(22,600)**	**(23,768)**	**(23,108)**
Total liabilities	**(50,417)**	**(52,463)**	**(53,982)**
Total net assets	**26,402**	**23,300**	**21,558**
Equity			
Capital and reserves attributable to Roche shareholders [21]	23,911	20,979	19,586
Equity attributable to non-controlling interests [23]	2,491	2,321	1,972
Total equity	**26,402**	**23,300**	**21,558**

Roche Group consolidated statement of cash flows in millions of CHF

	Year ended 31 December 2016	2015
Cash flows from operating activities		
Cash generated from operations [28]	21,225	20,651
(Increase) decrease in net working capital	(1,023)	(431)
Payments made for defined benefit plans [25]	(880)	(538)
Utilisation of provisions [19]	(762)	(835)
Disposal of products	179	70
Other operating cash flows	–	30
Cash flows from operating activities, before income taxes paid	**18,739**	**18,947**
Income taxes paid	(3,738)	(3,696)
Total cash flows from operating activities	**15,001**	**15,251**
Cash flows from investing activities		
Purchase of property, plant and equipment	(4,144)	(3,468)
Purchase of intangible assets	(1,001)	(642)
Disposal of property, plant and equipment	151	45
Disposal of intangible assets	–	–
Business combinations [5]	(74)	(2,140)
Divestment of subsidiaries	–	6
Interest and dividends received [28]	24	28
Sales of marketable securities	36,784	55,660
Purchases of marketable securities	(36,135)	(53,738)
Other investing cash flows	(118)	(27)
Total cash flows from investing activities	**(4,513)**	**(4,276)**
Cash flows from financing activities		
Proceeds from issue of bonds and notes [20]	3,158	2,663
Redemption and repurchase of bonds and notes [20]	(3,985)	(4,058)
Increase (decrease) in commercial paper [20]	(454)	(791)
Increase (decrease) in other debt [20]	(133)	130
Hedging and collateral arrangements	(211)	(400)
Changes in non-controlling interests	–	(2)
Equity contribution by non-controlling interests	–	40
Interest paid	(849)	(967)
Dividends paid [28]	(7,040)	(6,954)
Equity-settled equity compensation plans, net of transactions in own equity [26]	(557)	(169)
Other financing cash flows	–	–
Total cash flows from financing activities	**(10,071)**	**(10,508)**
Net effect of currency translation on cash and cash equivalents	15	(478)
Increase (decrease) in cash and cash equivalents	**432**	**(11)**
Cash and cash equivalents at 1 January	3,731	3,742
Cash and cash equivalents at 31 December [13]	**4,163**	**3,731**

Roche Group consolidated statement of changes in equity in millions of CHF

	Share capital	Retained earnings	Fair value reserves	Hedging reserves	Translation reserves	Total	Non-controlling interests	Total equity
Year ended 31 December 2015								
At 1 January 2015	**160**	**26,152**	**166**	**76**	**(6,968)**	**19,586**	**1,972**	**21,558**
Net income recognised in income statement	–	8,863	–	–	–	8,863	193	9,056
Available-for-sale investments	–	–	(12)	–	–	(12)	6	(6)
Cash flow hedges	–	–	–	(50)	–	(50)	(5)	(55)
Currency translation of foreign operations	–	–	1	1	(986)	(984)	(23)	(1,007)
Remeasurements of defined benefit plans	–	234	–	–	–	234	(5)	229
Total comprehensive income	**–**	**9,097**	**(11)**	**(49)**	**(986)**	**8,051**	**166**	**8,217**
Dividends	–	(6,807)	–	–	–	(6,807)	(108)	(6,915)
Equity compensation plans, net of transactions in own equity	–	155	–	–	–	155	9	164
Business combinations [5]	–	–	–	–	–	–	238	238
Changes in non-controlling interests [23]	–	(6)	–	–	–	(6)	4	(2)
Equity contribution by non-controlling interests [23]	–	–	–	–	–	–	40	40
At 31 December 2015	**160**	**28,591**	**155**	**27**	**(7,954)**	**20,979**	**2,321**	**23,300**
Year ended 31 December 2016								
At 1 January 2016	**160**	**28,591**	**155**	**27**	**(7,954)**	**20,979**	**2,321**	**23,300**
Net income recognised in income statement	–	9,576	–	–	–	9,576	157	9,733
Available-for-sale investments	–	–	26	–	–	26	(6)	20
Cash flow hedges	–	–	–	37	–	37	18	55
Currency translation of foreign operations	–	–	4	(1)	365	368	128	496
Remeasurements of defined benefit plans	–	186	–	–	–	186	(12)	174
Total comprehensive income	**–**	**9,762**	**30**	**36**	**365**	**10,193**	**285**	**10,478**
Dividends	–	(6,909)	–	–	–	(6,909)	(132)	(7,041)
Equity compensation plans, net of transactions in own equity	–	(344)	–	–	–	(344)	9	(335)
Changes in non-controlling interests [23]	–	(8)	–	–	–	(8)	8	–
At 31 December 2016	**160**	**31,092**	**185**	**63**	**(7,589)**	**23,911**	**2,491**	**26,402**

Notes to the Roche Group Consolidated Financial Statements

1. General accounting principles

Basis of preparation

The consolidated financial statements (hereafter 'the Annual Financial Statements') of the Roche Group have been prepared in accordance with International Financial Reporting Standards (IFRS) and comply with Swiss law. They have been prepared using the historical cost convention except for items that are required to be accounted for at fair value. They were approved for issue by the Board of Directors on 24 January 2017 and are subject to approval by the Annual General Meeting of shareholders on 14 March 2017.

These financial statements are the Annual Financial Statements of Roche Holding Ltd, a company registered in Switzerland, and its subsidiaries ('the Group').

The Group's significant accounting policies and changes in accounting policies are disclosed in Note 32.

Key accounting judgements, estimates and assumptions

The preparation of the Annual Financial Statements requires management to make judgements, estimates and assumptions that affect the reported amounts of revenues, expenses, assets, liabilities and contingent amounts. Actual outcomes could differ from those management estimates. The estimates and underlying assumptions are reviewed on an ongoing basis and are based on historical experience and various other factors. Revisions to estimates are recognised in the period in which the estimate is revised. The following are considered to be the key accounting judgements, estimates and assumptions made and are believed to be appropriate based upon currently available information.

Revenue. The nature of the Group's business is such that many sales transactions do not have a simple structure and may consist of multiple components occurring at different times. The Group is also party to out-licensing agreements which involve upfront and milestone payments occurring over several years and which may also involve certain future obligations. Revenue is only recognised when, in management's judgement, the significant risks and rewards of ownership have been transferred and when the Group does not retain continuing managerial involvement or effective control over the goods sold or when the obligation has been fulfilled. For some transactions this can result in cash receipts being initially recognised as deferred income and then released to income over subsequent periods on the basis of the performance of the conditions specified in the agreement. There may be circumstances such that the level of sales returns, and hence revenues, cannot be reliably measured. In such cases sales are only recognised when the right of return expires, which is generally upon prescription of the products to patients. In order to estimate this, management uses publicly available information about prescriptions as well as information provided by wholesalers and other intermediaries.

Revenues from product sales are recorded net of allowances for estimated rebates, chargebacks, cash discounts and estimates of product returns, all of which are established at the time of sale. All product sales allowances are based on estimates of the amounts earned or to be claimed on the related sales. At 31 December 2016 the Group had CHF 2,375 million in provisions and accruals for expected sales returns, charge-backs and other rebates, including Medicaid in the US and similar rebates in other countries. The provisions and accruals relating to the US Pharmaceuticals business amounted to CHF 1,200 million, of which CHF 405 million associated to expected sales returns. These estimates take into consideration historical experience, current contractual and statutory requirements, specific known market events and trends such as competitive pricing and new product introductions, estimated inventory levels, and the shelf life of products. If actual future results vary, these estimates need to be adjusted, which could have an effect on sales and earnings in the period of the adjustment. At 31 December 2016 the Group had CHF 538 million in provisions for doubtful receivables (see Note 11). Such estimates are based on analyses of ageing of customer balances, specific credit circumstances, historical trends and the Group's experience, taking also into account current economic conditions.

Business combinations. The Group initially recognises the fair value of identifiable assets acquired, the liabilities assumed, any non-controlling interest and the consideration transferred in a business combination. Management judgement is particularly involved in the recognition and fair value measurement of intellectual property, inventories, contingent liabilities and contingent consideration. In making this assessment, management considers the underlying economic substance of the items concerned in addition to the contractual terms.

Impairment. At 31 December 2016 the Group had CHF 19,957 million in property, plant and equipment (see Note 7), CHF 11,282 million in goodwill (see Note 8) and CHF 12,046 million in intangible assets (see Note 9). Goodwill and intangible assets not yet available for use are reviewed annually for impairment. Property, plant and equipment and intangible assets in use are assessed for impairment when there is a triggering event that provides evidence that an asset may be impaired. To assess whether any impairment exists, estimates of expected future cash flows are used. Actual outcomes could vary significantly from such estimates. Factors such as changes in discount rates, the planned use of buildings, machinery or equipment or closure of facilities, the presence of competition, technical obsolescence and lower than anticipated product sales could lead to shorter useful lives or impairment.

Pensions and other post-employment benefits. The Group operates a number of defined benefit plans and the fair values of the recognised plan assets and liabilities are based upon statistical and actuarial calculations. The measurement of the net defined benefit obligation is particularly sensitive to changes in the discount rate, inflation rate, expected mortality and medical cost trend rate assumptions. At 31 December 2016 the present value of the Group's defined benefit obligation is CHF 20,665 million (see Note 25). The actuarial assumptions used may differ materially from actual results due to changes in market and economic conditions, longer or shorter life spans of participants, and other changes in the factors being assessed. These differences could impact on the defined benefit plan assets and liabilities recognised in the balance sheet in future periods.

Legal provisions. The Group provides for anticipated legal settlement costs when there is a probable outflow of resources that can be reliably estimated. At 31 December 2016 the Group had CHF 705 million in legal provisions. The status of significant legal cases is disclosed in Note 19. These estimates consider the specific circumstances of each legal case, relevant legal advice and are inherently judgemental due to the highly complex nature of legal cases. The estimates could change substantially over time as new facts emerge and each legal case progresses. Where no reliable estimate can be made, no provision is recorded and contingent liabilities are disclosed where material.

Environmental provisions. The Group provides for anticipated environmental remediation costs when there is a probable outflow of resources that can be reasonably estimated. At 31 December 2016 the Group had CHF 518 million in environmental provisions (see Note 19). Environmental provisions consist primarily of costs to fully clean and refurbish contaminated sites, including landfills, and to treat and contain contamination at certain other sites. These estimates are inherently judgemental due to uncertainties related to the detection of previously unknown contamination, the method and extent of remediation, the percentage of the problematic materials attributable to the Group at the remediation sites, and the financial capabilities of other potentially responsible parties. The estimates could change substantially over time as new facts emerge and each environmental remediation progresses.

Contingent consideration provisions. The Group makes provision for the estimated fair value of contingent consideration arrangements arising from business combinations. At 31 December 2016 the Group had CHF 1,089 million in contingent consideration provisions (see Note 19) and the total potential payments under contingent consideration arrangements from business combinations could be up to CHF 2,874 million (see Note 29). The estimated amounts provided are the expected payments, determined by considering the possible scenarios of forecast sales and other performance criteria, the amount to be paid under each scenario, and the probability of each scenario, which is then discounted to a net present value. The estimates could change substantially over time as new facts emerge and each scenario develops.

Income taxes. At 31 December 2016 the Group had a current income tax net liability of CHF 2,378 million and a deferred tax net asset of CHF 1,988 million (see Note 4). Significant estimates are required to determine the current and deferred tax assets and liabilities. Some of these estimates are based on interpretations of existing tax laws or regulations. Where tax positions are uncertain, accruals are recorded within income tax liabilities for management's best estimate of the ultimate liability that is expected to arise based on the specific circumstances and the Group's historical experience. Factors that may impact on current and deferred taxes include changes in tax laws, regulations or rates, changing interpretations of existing tax laws or regulations, future levels of research and development spending and changes in pre-tax earnings.

Leases. The treatment of leasing transactions is mainly determined by whether the lease is considered to be an operating or finance lease. In making this assessment, management looks at the substance of the lease, as well as the legal form, and makes a judgement about whether substantially all of the risks and rewards of ownership are transferred. Arrangements which do not take the legal form of a lease but that nevertheless convey the right to use an asset are also covered by such assessments.

Consolidation. The Group periodically undertakes transactions that may involve obtaining control or significant influence of other companies. These transactions include equity acquisitions, asset purchases and alliance agreements. In all such cases management makes an assessment as to whether the Group has control or significant influence of the other company, and whether it should be consolidated as a subsidiary or accounted for as an associated company. In making this assessment, management considers the underlying economic substance of the transaction in addition to the contractual terms.

2. Operating segment information

The Group has two divisions, Pharmaceuticals and Diagnostics. Revenues are primarily generated from the sale of prescription pharmaceutical products and diagnostic instruments, reagents and consumables respectively. Both divisions also derive revenues from the sale or licensing of products or technology to third parties. Residual operating activities from divested businesses and certain global activities are reported as 'Corporate'. These include the Corporate Executive Committee and global group functions for communications, human resources, finance (including treasury, taxes and pension fund management), legal, safety and environmental services. Sub-divisional information for Roche Pharmaceuticals and Chugai, operating segments within the Pharmaceuticals Division, is also presented.

Divisional information in millions of CHF

	Pharmaceuticals		Diagnostics		Corporate		Group	
	2016	2015	2016	2015	2016	2015	2016	2015
Revenues from external customers								
Sales	39,103	37,331	11,473	10,814	–	–	50,576	48,145
Royalties and other operating income	1,944	2,119	116	139	–	–	2,060	2,258
Total	**41,047**	**39,450**	**11,589**	**10,953**	**–**	**–**	**52,636**	**50,403**
Revenues from other operating segments								
Sales	–	–	13	11	–	–	13	11
Royalties and other operating income	–	–	–	–	–	–	–	–
Elimination of inter-divisional revenue	–	–	–	–	–	–	(13)	(11)
Total	**–**	**–**	**13**	**11**	**–**	**–**	**–**	**–**
Segment results								
Operating profit	13,285	13,003	1,213	1,289	(429)	(471)	14,069	13,821
Capital expenditure								
Business combinations	–	1,700	–	2,009	–	–	–	3,709
Additions to property, plant and equipment	2,154	2,706	1,629	1,363	7	8	3,790	4,077
Additions to intangible assets	1,033	441	32	129	–	–	1,065	570
Total	**3,187**	**4,847**	**1,661**	**3,501**	**7**	**8**	**4,855**	**8,356**
Research and development								
Research and development costs	10,156	8,367	1,376	1,214	–	–	11,532	9,581
Other segment information								
Depreciation of property, plant and equipment	1,212	1,098	938	863	8	7	2,158	1,968
Amortisation of intangible assets	1,452	1,358	331	314	–	–	1,783	1,672
Impairment of property, plant and equipment	256	180	35	11	–	–	291	191
Impairment of goodwill	95	–	–	–	–	–	95	–
Impairment of intangible assets	1,343	69	70	–	–	–	1,413	69
Inventory fair value adjustment	167	552	–	–	–	–	167	552
Equity compensation plan expenses	371	323	69	53	33	27	473	403

Pharmaceuticals sub-divisional information in millions of CHF

	Roche Pharmaceuticals		Chugai		Pharmaceuticals Division	
	2016	2015	2016	2015	2016	2015
Revenues from external customers						
Sales	35,392	34,107	3,711	3,224	39,103	37,331
Royalties and other operating income	1,912	2,088	32	31	1,944	2,119
Total	**37,304**	**36,195**	**3,743**	**3,255**	**41,047**	**39,450**
Revenues from other operating segments						
Sales	1,363	1,310	568	502	1,931	1,812
Royalties and other operating income	58	30	141	212	199	242
Elimination of income within division	–	–	–	–	(2,130)	(2,054)
Total	**1,421**	**1,340**	**709**	**714**	**–**	**–**
Segment results						
Operating profit	12,476	12,372	682	669	13,158	13,041
Elimination of results within division	–	–	–	–	127	(38)
Operating profit	**12,476**	**12,372**	**682**	**669**	**13,285**	**13,003**
Capital expenditure						
Business combinations	–	1,700	–	–	–	1,700
Additions to property, plant and equipment	1,978	2,485	176	221	2,154	2,706
Additions to intangible assets	964	400	69	41	1,033	441
Total	**2,942**	**4,585**	**245**	**262**	**3,187**	**4,847**
Research and development						
Research and development costs	9,399	7,800	784	674	10,183	8,474
Elimination of costs within Division	–	–	–	–	(27)	(107)
Total	**9,399**	**7,800**	**784**	**674**	**10,156**	**8,367**
Other segment information						
Depreciation of property, plant and equipment	1,080	988	132	110	1,212	1,098
Amortisation of intangible assets	1,437	1,330	15	28	1,452	1,358
Impairment of property, plant and equipment	255	178	1	2	256	180
Impairment of goodwill	95	–	–	–	95	–
Impairment of intangible assets	1,323	60	20	9	1,343	69
Inventory fair value adjustment	167	552	–	–	167	552
Equity compensation plan expenses	367	320	4	3	371	323

Net operating assets in millions of CHF

	Assets			Liabilities			Net assets		
	2016	2015	2014	2016	2015	2014	2016	2015	2014
Pharmaceuticals	42,212	42,460	41,686	(11,456)	(11,844)	(10,738)	30,756	30,616	30,948
Diagnostics	20,329	19,408	17,475	(4,141)	(3,976)	(3,355)	16,188	15,432	14,120
Corporate	146	149	160	(463)	(515)	(674)	(317)	(366)	(514)
Total operating	**62,687**	**62,017**	**59,321**	**(16,060)**	**(16,335)**	**(14,767)**	**46,627**	**45,682**	**44,554**
Non-operating	14,132	13,746	16,219	(34,357)	(36,128)	(39,215)	(20,225)	(22,382)	(22,996)
Group	**76,819**	**75,763**	**75,540**	**(50,417)**	**(52,463)**	**(53,982)**	**26,402**	**23,300**	**21,558**

Net operating assets – Pharmaceuticals sub-divisional information in millions of CHF

	Assets			Liabilities			Net assets		
	2016	2015	2014	2016	2015	2014	2016	2015	2014
Roche Pharmaceuticals	38,783	39,696	39,057	(11,175)	(11,514)	(10,437)	27,608	28,182	28,620
Chugai	4,897	4,246	3,985	(1,025)	(1,002)	(878)	3,872	3,244	3,107
Elimination within division	(1,468)	(1,482)	(1,356)	744	672	577	(724)	(810)	(779)
Pharmaceuticals Division	**42,212**	**42,460**	**41,686**	**(11,456)**	**(11,844)**	**(10,738)**	**30,756**	**30,616**	**30,948**

Information by geographical area in millions of CHF

	Revenues from external customers		Non-current assets	
	Sales	Royalties and other operating income	Property, plant and equipment	Goodwill and intangible assets
2016				
Switzerland	577	219	5,028	3,294
Germany	3,004	28	3,623	1,038
Rest of Europe	10,264	3	957	355
Europe	**13,845**	**250**	**9,608**	**4,687**
United States	21,192	1,767	6,758	18,417
Rest of North America	851	1	90	–
North America	**22,043**	**1,768**	**6,848**	**18,417**
Latin America	2,681	–	354	10
Japan	4,211	32	1,483	209
Rest of Asia	6,461	10	1,559	3
Asia	**10,672**	**42**	**3,042**	**212**
Africa, Australia and Oceania	1,335	–	105	2
Total	**50,576**	**2,060**	**19,957**	**23,328**
2015				
Switzerland	497	165	4,637	4,370
Germany	2,734	24	3,186	1,128
Rest of Europe	10,046	4	1,049	357
Europe	**13,277**	**193**	**8,872**	**5,855**
United States	20,164	2,024	6,305	18,913
Rest of North America	855	1	90	–
North America	**21,019**	**2,025**	**6,395**	**18,913**
Latin America	2,832	–	309	8
Japan	3,648	31	1,351	165
Rest of Asia	6,006	9	1,458	–
Asia	**9,654**	**40**	**2,809**	**165**
Africa, Australia and Oceania	1,363	–	88	2
Total	**48,145**	**2,258**	**18,473**	**24,943**

Supplementary unaudited information on sales by therapeutic areas in the Pharmaceuticals Division and by business areas in the Diagnostics Division are given in the Financial Review. Sales are allocated to geographical areas by destination according to the location of the customer. Royalties and other operating income are allocated according to the location of the Group company that receives the revenue.

Major customers

In total three US national wholesale distributors represent just over a quarter of the Group's revenues in 2016. The three US national wholesale distributors are AmerisourceBergen Corp. with CHF 6 billion (2015: CHF 5 billion); McKesson Corp. with CHF 6 billion (2015: CHF 6 billion) and Cardinal Health, Inc. with CHF 4 billion (2015: CHF 4 billion). Approximately 96% of these revenues were in the Pharmaceuticals operating segment, with the residual in the Diagnostics segment.

Supplementary revenues information

Revenues from product sales are recorded net of allowances for estimated rebates, chargebacks, cash discounts and estimates of product returns, all of which are established at the time of sale. All product sales allowances are based on estimates of the amounts earned or to be claimed on the related sales. These estimates take into consideration historical experience, current contractual and statutory requirements, specific known market events and trends such as competitive pricing and new product introductions, estimated inventory levels, and the shelf life of products. If actual future results vary, these estimates need to be adjusted, which could have an effect on sales and earnings in the period of the adjustment.

The gross-to-net sales reconciliation for the Pharmaceuticals Division is shown in the table below. The companies in the Diagnostics Division have similar reconciling items, but at much lower amounts.

Pharmaceuticals Division sales gross-to-net reconciliation in millions of CHF

	2016	2015
Gross sales	45,774	42,526
Government and regulatory mandatory price reductions	(4,414)	(3,496)
Contractual price reductions	(1,702)	(1,224)
Cash discounts	(369)	(271)
Customer returns reserves	(86)	(88)
Others	(100)	(116)
Net sales	**39,103**	**37,331**

Government and regulatory mandatory price reductions. These consist of mandatory price reductions. The major elements are 340B Drug Discount Program, Medicaid, and other plans in the US, which totalled USD 3.7 billion equivalent to CHF 3.7 billion (2015: USD 2.9 billion equivalent to CHF 2.8 billion).

Contractual price reductions. These include rebates and chargebacks that are the result of contractual agreements that are primarily volume-based and performance-based.

Cash discounts. These include credits offered to wholesalers for remitting payment on their purchases within contractually defined incentive periods.

Customer returns reserves. These are allowances established for expected product returns.

Sales reductions that are expected to be withheld by the customer upon settlement, such as contractual price reductions and cash discounts, are recorded in the balance sheet as a deduction from trade receivables (see Note 11). Sales reductions that are separately payable to customers, governmental health authorities or healthcare regulatory authorities are recorded in the balance sheet as accrued liabilities (see Note 18). Provisions for sales returns are recorded in the balance sheet as other provisions (see Note 19).

Revenues – Royalties and other operating income in millions of CHF

	2016	2015
Royalty income	1,619	1,825
Income from out-licensing agreements	101	240
Income from disposal of products and other	340	193
Total royalty and other operating income	**2,060**	**2,258**

In 2016 income from product disposals and other operating income included the product divestment of Xenical.

In 2015 income from out-licensing arrangements included upfront and milestone payments from the exclusive licence agreement with Galenica for the commercialisation of Mircera in the US and a payment from a collaboration partner for a de-blocking amendment.

3. Net financial expense

Financing costs in millions of CHF

	2016	2015
Interest expense	(688)	(866)
Amortisation of debt discount [20]	(19)	(19)
Net gains (losses) on debt derivatives	1	–
Net gains (losses) on redemption and repurchase of bonds and notes [20]	(142)	(79)
Loss on major debt restructuring [20]	–	(381)
Discount unwind [19]	(65)	(53)
Net interest cost of defined benefit plans [25]	(186)	(176)
Total financing costs	**(1,099)**	**(1,574)**

Other financial income (expense) in millions of CHF

	2016	2015
Net gains (losses) on sale of equity securities	162	142
Net gains (losses) on equity security derivatives	–	–
Dividend income	2	2
Write-downs and impairments of equity securities	(10)	(10)
Net income from equity securities	**154**	**134**
Interest income	22	24
Net gains (losses) on sale of debt securities	3	7
Net interest income and income from debt securities	**25**	**31**
Net foreign exchange gains (losses)	44	(470)
Net gains (losses) on foreign currency derivatives	(168)	84
Foreign exchange gains (losses)	**(124)**	**(386)**
Net other financial income (expense)	(18)	(39)
Associates	–	–
Total other financial income (expense)	**37**	**(260)**

Net financial expense in millions of CHF

	2016	2015
Financing costs	(1,099)	(1,574)
Other financial income (expense)	37	(260)
Net financial expense	**(1,062)**	**(1,834)**
Financial result from Treasury management	(876)	(1,658)
Financial result from Pension management	(186)	(176)
Associates	–	–
Net financial expense	**(1,062)**	**(1,834)**

4. Income taxes

Income tax expenses in millions of CHF

	2016	2015
Current income taxes	(3,576)	(4,001)
Deferred taxes	302	1,070
Total income tax (expense)	**(3,274)**	**(2,931)**

Since the Group operates internationally, it is subject to income taxes in many different tax jurisdictions. The Group calculates its average expected tax rate as a weighted average of the tax rates in the tax jurisdictions in which the Group operates. This rate changes from year to year due to changes in the mix of the Group's taxable income and changes in local tax rates.

The Group's average expected tax rate decreased to 24.7% in 2016 (2015: 24.9%). The main drivers for the decrease were the lower local tax rate in Japan and the lower proportion of the Group's profits coming from tax jurisdictions with higher local tax rates than the average Group tax rate.

The Group's effective tax rate increased to 25.2% in 2016 (2015: 24.5%). The main drivers for the increase were the deferred tax impact from tax rate changes in various countries and the deferred tax impact in respect of equity compensation plans, which varies according to the price of the underlying equity. These were partially offset by the favourable impact from the release of contingent consideration provisions that is not taxable.

The Group's effective tax rate can be reconciled to the Group's average expected tax rate as follows:

Reconciliation of the Group's effective tax rate

	2016	2015
Average expected tax rate	24.7%	24.9%
Tax effect of		
– Non-taxable income/non-deductible expenses	+1.3%	+2.4%
– Equity compensation plans	+0.8%	+0.2%
– Research and development tax credits and manufacturing deductions	–2.6%	–2.9%
– US state tax impacts	+0.7%	+0.6%
– Tax on unremitted earnings	+1.7%	+1.9%
– Utilisation of previously unrecognised tax losses	–0.3%	–0.6%
– Deferred tax on intra-group transfers	–2.3%	–2.0%
– Prior year and other differences	+1.2%	–
Group's effective tax rate	**25.2%**	**24.5%**

The income tax benefit recorded in respect of equity compensation plans, which varies according to the price of the underlying equity, was CHF 3 million (2015: CHF 81 million). Had the income tax benefits been recorded solely on the basis of the IFRS 2 expense multiplied by the applicable tax rate, then a benefit of approximately CHF 111 million (2015: CHF 111 million) would have been recorded.

Tax effects of other comprehensive income in millions of CHF

	2016			2015		
	Pre-tax amount	Tax	After-tax amount	Pre-tax amount	Tax	After-tax amount
Remeasurements of defined benefit plans	192	(18)	174	339	(110)	229
Available-for-sale investments	13	7	20	(23)	17	(6)
Cash flow hedges	81	(26)	55	(84)	29	(55)
Currency translation of foreign operations	496	–	496	(1,007)	–	(1,007)
Other comprehensive income	**782**	**(37)**	**745**	**(775)**	**(64)**	**(839)**

Income tax assets (liabilities) in millions of CHF

	2016	2015	2014
Current income taxes			
– Assets	335	239	244
– Liabilities	(2,713)	(2,781)	(2,616)
Net current income tax assets (liabilities)	**(2,378)**	**(2,542)**	**(2,372)**
Deferred taxes			
– Assets	2,826	2,564	2,829
– Liabilities	(838)	(545)	(504)
Net deferred tax assets (liabilities)	**1,988**	**2,019**	**2,325**

Current income tax liabilities include accruals for uncertain tax positions.

Current income taxes: movements in recognised net assets (liabilities) in millions of CHF

	2016	2015
Net current income tax asset (liability) at 1 January	(2,542)	(2,372)
Income taxes paid	3,738	3,696
Business combinations	–	(3)
(Charged) credited to the income statement	(3,576)	(4,001)
(Charged) credited to equity from equity compensation plans and other transactions with shareholders	69	142
Currency translation effects and other movements	(67)	(4)
Net current income tax asset (liability) at 31 December	**(2,378)**	**(2,542)**

Deferred taxes: movements in recognised net assets (liabilities) in millions of CHF

	Property, plant and equipment	Intangible assets	Defined benefit plans	Other temporary differences	Total
Year ended 31 December 2015					
At 1 January 2015	(824)	(3,530)	1,797	4,882	2,325
Business combinations [5]	–	(905)	–	7	(898)
(Charged) credited to the income statement	48	872	26	124	1,070
(Charged) credited to other comprehensive income [21]	–	–	(110)	46	(64)
(Charged) credited to equity from equity compensation plans and other transactions with shareholders	–	–	–	(214)	(214)
Currency translation effects and other movements	22	32	(91)	(163)	(200)
At 31 December 2015	**(754)**	**(3,531)**	**1,622**	**4,682**	**2,019**
Year ended 31 December 2016					
At 1 January 2016	(754)	(3,531)	1,622	4,682	2,019
(Charged) credited to the income statement	(88)	971	(50)	(531)	302
(Charged) credited to other comprehensive income [21]	–	–	(18)	(19)	(37)
(Charged) credited to equity from equity compensation plans and other transactions with shareholders	–	–	–	(322)	(322)
Currency translation effects and other movements	(20)	(88)	16	118	26
At 31 December 2016	**(862)**	**(2,648)**	**1,570**	**3,928**	**1,988**

The deferred tax net assets for other temporary differences mainly relate to accrued and other liabilities, provisions and unrealised profit in inventory.

Deferred tax assets are recognised for tax losses carried forward only to the extent that realisation of the related tax benefit is probable. The Group has unrecognised tax losses, including valuation allowances, as follows:

Unrecognised tax losses: expiry

	Amount (CHF m)	2016 Applicable tax rate	Amount (CHF m)	2015 Applicable tax rate
Within one year	186	12%	95	14%
Between one and five years	2,095	12%	884	13%
More than five years	8,021	4%	7,782	5%
Total unrecognised tax losses	**10,302**	**6%**	**8,761**	**6%**

The ‘More than five years’ category includes losses that cannot be used for US state income tax purposes in those states which only permit tax reporting on a separate entity basis.

Deferred tax liabilities have not been established for the withholding tax and other taxes that would be payable on the remittance of earnings of foreign subsidiaries, where such amounts are currently regarded as permanently reinvested. The total unremitted earnings of the Group, regarded as permanently reinvested, were CHF 29.9 billion at 31 December 2016 (2015: CHF 25.7 billion).

5. Business combinations

Acquisitions – 2016

The Group did not complete any business combinations in 2016.

Acquisitions – 2015

Acquisitions – 2015: net assets acquired in millions of CHF

	Pharmaceuticals	Diagnostics	Total
Intangible assets			
– Product intangibles: in use [9]	512	887	1,399
– Product intangibles: not available for use [9]	435	523	958
– Marketing intangibles: in use [9]	–	15	15
Cash and cash equivalents	300	29	329
Deferred tax liabilities [4]	(339)	(559)	(898)
Other net assets (liabilities)	(20)	24	4
Net identifiable assets	**888**	**919**	**1,807**
Non-controlling interests [23]	(238)	–	(238)
Fair value of previously held equity interest	(20)	–	(20)
Goodwill [8]	729	570	1,299
Total consideration	**1,359**	**1,489**	**2,848**
Cash	1,118	1,163	2,281
Contingent consideration [29]	241	326	567
Total consideration	**1,359**	**1,489**	**2,848**

Pharmaceuticals

Trophos. On 3 March 2015 the Group acquired a 100% controlling interest in Trophos, a privately owned company based in Marseille, France. Trophos is reported in the Pharmaceuticals Division. The total consideration was EUR 345 million, of which EUR 120 million was paid in cash and EUR 225 million arose from a contingent consideration arrangement. The contingent payments are based on the achievement of performance-related milestones and the range of undiscounted outcomes is between zero and EUR 350 million. In 2016 an impairment of CHF 187 million was recorded against the intangible assets acquired in the Trophos acquisition (see Note 9).

Foundation Medicine, Inc. On 7 April 2015 the Group acquired a 61.3% controlling interest in Foundation Medicine, Inc. ('FMI'), a publicly owned US company based in Cambridge, Massachusetts. FMI is listed on Nasdaq under the stock code 'FMI'. FMI is reported in the Pharmaceuticals Division. The total cash consideration was USD 1.0 billion.

The identifiable assets acquired and liabilities assumed are set out in the table below.

Pharmaceuticals acquisitions – 2015: net assets acquired in millions of CHF

	Trophos	FMI	Total
Intangible assets			
– Product intangibles: in use	–	512	512
– Product intangibles: not available for use	435	–	435
Cash and cash equivalents	1	299	300
Deferred tax liabilities	(150)	(189)	(339)
Other net assets (liabilities)	(14)	(6)	(20)
Net identifiable assets	**272**	**616**	**888**
Non-controlling interests	–	(238)	(238)
Fair value of previously held equity interest	–	(20)	(20)
Goodwill: allocated to Foundation Medicine [8]	–	95	95
Goodwill: allocated to Roche Pharmaceuticals	98	536	634
Total consideration	**370**	**989**	**1,359**
Cash	129	989	1,118
Contingent consideration	241	–	241
Total consideration	**370**	**989**	**1,359**

The fair value of the intangible assets is determined using an excess earning method that is based on management forecasts and observable market data for discount rates, tax rates and foreign exchange rates. The present value is calculated using a risk-adjusted discount rate of 10.0% for Trophos and 9.5% for FMI. The valuations were performed by independent valuers.

For Trophos the goodwill represents a control premium, the acquired work force and the synergies that can be expected from integrating the acquired company into the Group's existing business. None of the goodwill is expected to be deductible for income tax purposes.

For FMI the goodwill represents the strategic value to Roche Pharmaceuticals of accessing FMI's molecular information and genomic analysis. It also represents the premium paid over the traded market price to obtain control of the business, the acquired workforce and expected synergies. None of the goodwill is expected to be deductible for income tax purposes. The non-controlling interests in FMI were measured at the date of acquisition at their proportionate share (38.7%) of FMI's identifiable net assets.

The Group recognised a financial gain of CHF 16 million from fair valuing the 1.2% equity interest in FMI held by the Group prior to the transaction. This gain is included in other financial income (expense) for 2015.

Directly attributable transaction costs of CHF 9 million are reported in the Pharmaceuticals operating segment within general and administration expenses and mainly relate to the FMI acquisition.

The impact of the Trophos and FMI acquisitions on the 2015 results for the Pharmaceuticals Division and the Group were not material.

Diagnostics

Ariosa Diagnostics, Inc. On 12 January 2015 the Group acquired a 100% controlling interest in Ariosa Diagnostics, Inc. ('Ariosa'), a US privately owned company based in San Jose, California. Ariosa is reported in the Diagnostics operating segment as part of the sequencing business. The total consideration was USD 565 million, of which USD 411 million was paid in cash and USD 154 million arose from a contingent consideration arrangement. The contingent payments are based on the achievement of performance-related milestones and the range of undiscounted outcomes is between zero and USD 225 million.

Signature Diagnostics AG. On 12 February 2015 the Group acquired a 100% controlling interest in Signature Diagnostics AG ('Signature'), a privately owned company based in Potsdam, Germany. Signature is reported in the Diagnostics operating segment as part of the sequencing business. The total cash consideration was EUR 28 million.

CAPP Medical, Inc. On 9 April 2015 the Group acquired a 100% controlling interest in CAPP Medical, Inc. ('CAPP'), a US privately owned company based in Palo Alto, California. CAPP is reported in the Diagnostics operating segment as part of the sequencing business. The total consideration was USD 96 million, of which USD 70 million was paid in cash and USD 26 million arose from a contingent consideration arrangement. The contingent payments are based on the achievement of performance-related milestones and the range of undiscounted outcomes is between zero and USD 55 million.

GeneWeave Biosciences, Inc. On 14 August 2015 the Group acquired a 100% controlling interest in GeneWeave Biosciences, Inc. ('GeneWeave'), a US privately owned company based in Los Gatos, California. GeneWeave is reported in the Diagnostics operating segment as part of the molecular diagnostics business. The total consideration was USD 350 million, of which USD 192 million was paid in cash and USD 158 million arose from a contingent consideration arrangement. The contingent payments are based on the achievement of performance-related milestones and the range of undiscounted outcomes is between zero and USD 235 million.

Kapa Biosystems, Inc. On 30 November 2015 the Group acquired a 100% controlling interest in Kapa Biosystems, Inc. ('Kapa'), a US privately owned company based in Wilmington, Massachusetts. Kapa is reported in the Diagnostics operating segment as part of the sequencing business. The total cash consideration was USD 445 million.

The identifiable assets acquired and liabilities assumed are set out in the table below.

Diagnostics acquisitions – 2015: net assets acquired in millions of CHF

	Ariosa	Signature	CAPP	GeneWeave	Kapa	Total
Intangible assets						
– Product intangibles: in use	525	39	–	–	323	887
– Product intangibles: not available for use	–	–	111	412	–	523
– Marketing intangibles: in use	–	–	–	–	15	15
Cash and cash equivalents	16	4	–	1	8	29
Deferred tax liabilities	(210)	(12)	(44)	(158)	(135)	(559)
Other net assets (liabilities)	17	(1)	(3)	2	9	24
Net identifiable assets	**348**	**30**	**64**	**257**	**220**	**919**
Goodwill	225	–	26	80	239	570
Total consideration	**573**	**30**	**90**	**337**	**459**	**1,489**
Cash	417	30	68	189	459	1,163
Contingent consideration	156	–	22	148	–	326
Total consideration	**573**	**30**	**90**	**337**	**459**	**1,489**

The fair value of the intangible assets is determined using an excess earning method that is based on management forecasts and observable market data for discount rates, tax rates and foreign exchange rates. The present value is calculated using a risk-adjusted discount rate of 10.0% for Ariosa, 17.1% for CAPP, 9.5% for GeneWeave and 11.7% for Kapa. The valuations for Ariosa, CAPP, GeneWeave and Kapa were performed by independent valuers.

Goodwill represents a control premium, the acquired work force and the synergies that can be expected from integrating the acquired companies into the Group's existing business. None of the goodwill is expected to be deductible for income tax purposes.

Directly attributable transaction costs of CHF 5 million are reported in the Diagnostics operating segment within general and administration expenses.

The impact of the Ariosa, Signature, CAPP, GeneWeave and Kapa acquisitions on the 2015 results for the Diagnostics Division and the Group were not material.

Cash flows from business combinations

Acquisitions: net cash outflow in millions of CHF

	Pharmaceuticals	Diagnostics	2016 Total	Pharmaceuticals	Diagnostics	2015 Total
Cash consideration paid	–	–	–	(1,118)	(1,163)	(2,281)
Deferred consideration paid [19]	–	(5)	(5)	(52)	(3)	(55)
Contingent consideration paid [29]	–	(69)	(69)	(4)	(115)	(119)
Cash in acquired company	–	–	–	300	29	329
Transaction costs	–	–	–	(9)	(5)	(14)
Total net cash outflow	**–**	**(74)**	**(74)**	**(883)**	**(1,257)**	**(2,140)**

6. Global restructuring plans

During 2016 the Group continued with the implementation of several major global restructuring plans initiated in prior years, notably the strategic realignment of the Pharmaceuticals Division's manufacturing network, and programmes to address long-term strategy in the Diagnostics Division.

Global restructuring plans: costs incurred in millions of CHF

	Diagnostics[1]	Site consolidation[2]	Other plans[3]	Total
Year ended 31 December 2016				
Global restructuring costs				
– Employee-related costs	90	86	127	303
– Site closure costs	33	367	3	403
– Other reorganisation expenses	189	271	67	527
Total global restructuring costs	**312**	**724**	**197**	**1,233**
Additional costs				
– Impairment of goodwill	–	–	–	–
– Impairment of intangible assets	–	–	–	–
– Legal and environmental cases	–	24	–	24
Total costs	**312**	**748**	**197**	**1,257**
Year ended 31 December 2015				
Global restructuring costs				
– Employee-related costs	71	198	89	358
– Site closure costs	22	317	2	341
– Divestment of products and businesses	–	–	23	23
– Other reorganisation expenses	208	66	66	340
Total global restructuring costs	**301**	**581**	**180**	**1,062**
Additional costs				
– Impairment of goodwill	–	–	–	–
– Impairment of intangible assets	–	–	–	–
– Legal and environmental cases	–	107	–	107
Total costs	**301**	**688**	**180**	**1,169**

1) Includes the Diabetes Care 'Autonomy and Speed' restructuring plan.
2) Includes the Pharmaceuticals Division strategic realignment of its manufacturing network.
3) Includes plans for Pharmaceuticals Division research and development strategic realignment and IT outsourcing.

Diagnostics Division

In 2016 costs from the Roche Diabetes Care 'Autonomy and Speed' initiative were CHF 132 million (2015: CHF 175 million), mainly for consultancy and IT-related matters as well as employee-related costs. New strategy plans in Diagnostics and Diabetes Care incurred costs of CHF 106 million related to site closures and employees. Spending on other smaller plans within the division was CHF 74 million and included costs related to certain IT projects.

Site consolidation

On 12 November 2015 the Pharmaceuticals Division announced a strategic realignment of its manufacturing network including exiting from the manufacturing sites at Clarecastle, Ireland; Leganés, Spain; Segrate, Italy; and Florence, US. Costs from this plan in 2016 were CHF 733 million (2015: CHF 602 million), of which CHF 337 million were non-cash write-downs and accelerated depreciation of property, plant and equipment (2015: CHF 182 million) and CHF 396 million were related to other site closures costs, employee costs and other reorganisation expenses. The divestment of the Nutley site in the US was completed in the second half of 2016 and resulted in an increase in provisions for environmental remediation (see Note 19).

Other global restructuring plans

In 2016 total costs were CHF 197 million, with the major items being CHF 74 million from the Pharmaceuticals Division research and development strategic realignment and CHF 90 million in informatics mainly for the outsourcing of IT functions to shared service centres and external providers. The remaining minor plans totalled CHF 33 million.

In 2015 total costs were CHF 180 million, with the major items being CHF 62 million from the Pharmaceuticals Division research and development strategic realignment and CHF 55 million from various initiatives to reduce the field force in the Europe and Asia-Pacific regions. As part of this realignment on 23 April 2015 the Group sold its wholly owned subsidiary Marcadia Biotech, Inc. to a third party with a loss on disposal of CHF 23 million. The remaining minor plans totalled CHF 63 million.

Global restructuring plans: summary of costs incurred in millions of CHF

	2016	2015
Employee-related costs		
– Termination costs	231	283
– Defined benefit plans	11	12
– Other employee-related costs	61	63
Total employee-related costs	**303**	**358**
Site closure costs		
– Impairment of property, plant and equipment	258	174
– Accelerated depreciation of property, plant and equipment	128	48
– (Gains) losses on disposal of property, plant and equipment	(54)	1
– Other site closure costs	71	118
Total site closure costs	**403**	**341**
Loss on divestment of subsidiary	–	23
Total costs on divestment of products and businesses	**–**	**23**
Other reorganisation expenses	527	340
Total global restructuring costs	**1,233**	**1,062**
Additional costs		
– Impairment of goodwill	–	–
– Impairment of intangible assets	–	–
– Legal and environmental cases	24	107
Total costs	**1,257**	**1,169**

Global restructuring plans: classification of costs in millions of CHF

	2016			2015		
	Depreciation, amortisation and impairment	Other costs	Total	Depreciation, amortisation and impairment	Other costs	Total
Cost of sales						
– Pharmaceuticals	351	386	737	211	347	558
– Diagnostics	27	73	100	9	87	96
Marketing and distribution						
– Pharmaceuticals	2	24	26	–	87	87
– Diagnostics	–	102	102	–	116	116
Research and development						
– Pharmaceuticals	2	88	90	–	46	46
– Diagnostics	3	40	43	1	10	11
General and administration						
– Pharmaceuticals	1	81	82	1	171	172
– Diagnostics	–	66	66	–	77	77
– Corporate	–	11	11	–	6	6
Total	**386**	**871**	**1,257**	**222**	**947**	**1,169**
Total by operating segment						
– Roche Pharmaceuticals	356	579	935	212	651	863
– Chugai	–	–	–	–	–	–
– Diagnostics	30	281	311	10	290	300
– Corporate	–	11	11	–	6	6
Total	**386**	**871**	**1,257**	**222**	**947**	**1,169**

7. Property, plant and equipment

Property, plant and equipment: movements in carrying value of assets in millions of CHF

	Land	Buildings and land improvements	Machinery and equipment	Construction in progress	Total
At 1 January 2015					
Cost	867	12,910	18,039	2,521	34,337
Accumulated depreciation and impairment	(3)	(5,573)	(11,513)	(53)	(17,142)
Net book value	**864**	**7,337**	**6,526**	**2,468**	**17,195**
Year ended 31 December 2015					
At 1 January 2015	864	7,337	6,526	2,468	17,195
Business combinations	–	11	25	2	38
Additions	86	786	1,062	2,143	4,077
Disposals	(3)	(6)	(61)	–	(70)
Transfers	1	810	858	(1,669)	–
Depreciation charge	–	(550)	(1,418)	–	(1,968)
Impairment charge	–	(14)	(167)	(10)	(191)
Other	–	–	(10)	–	(10)
Currency translation effects	(15)	(187)	(321)	(75)	(598)
At 31 December 2015	**933**	**8,187**	**6,494**	**2,859**	**18,473**
Cost	933	14,064	18,300	2,897	36,194
Accumulated depreciation and impairment	–	(5,877)	(11,806)	(38)	(17,721)
Net book value	**933**	**8,187**	**6,494**	**2,859**	**18,473**
Year ended 31 December 2016					
At 1 January 2016	933	8,187	6,494	2,859	18,473
Business combinations	–	–	–	–	–
Additions	22	242	1,103	2,423	3,790
Disposals	(8)	(41)	(70)	(1)	(120)
Transfers	8	740	900	(1,648)	–
Depreciation charge	–	(593)	(1,565)	–	(2,158)
Impairment charge	(3)	(107)	(165)	(16)	(291)
Other	–	(1)	(10)	(2)	(13)
Currency translation effects	26	133	90	27	276
At 31 December 2016	**978**	**8,560**	**6,777**	**3,642**	**19,957**
Cost	981	14,772	19,723	3,671	39,147
Accumulated depreciation and impairment	(3)	(6,212)	(12,946)	(29)	(19,190)
Net book value	**978**	**8,560**	**6,777**	**3,642**	**19,957**

Classification of impairment of property, plant and equipment in millions of CHF

	2016	2015
Cost of sales	(280)	(182)
Marketing and distribution	–	–
Research and development	(11)	(1)
General and administration	–	(8)
Total impairment charge	**(291)**	**(191)**

Impairment charges for property, plant and equipment mainly related to global restructuring plans (see Note 6).

In 2016 no reimbursements were received from insurance companies in respect of impairments to property, plant and equipment (2015: none). In 2016 no borrowing costs were capitalised as property, plant and equipment (2015: none).

Divestment of Nutley site in 2016

On 29 September 2016, the Group completed the divestment of the Nutley site to a third party as part of a previously announced restructuring. The total net consideration received in cash was CHF 96 million. As part of the divestment, the expected costs of environmental remediation were reassessed and accordingly the environmental provisions were increased by CHF 24 million (see Note 19).

Genentech property purchase option exercise in 2015

In 2004 Genentech entered into a Master Lease Agreement ('MLA') with Slough SSF LLC ('Slough'), which was subsequently acquired by Health Care Properties, for the lease of property adjacent to Genentech's South San Francisco site, which was to be developed by Slough. The development included a total of eight buildings and construction was completed during 2008, at which time Genentech fully occupied the property. The property lease was until 2020 with extension options to 2030. On 1 November 2015 Genentech exercised a purchase option contained in the MLA to acquire the eight buildings and land. At 31 December 2015 the Group recorded an addition to 'land' and 'buildings and land improvements' and corresponding liabilities for the cash outflows in 2016 and 2018. The Group also reclassified the finance lease accounting balances that previously applied to these buildings. In November 2016 the first closing payment of USD 311 million was made that reduced the short-term liability (see Note 18). The final closing payment of USD 269 million is due in July 2018 and is recorded as a long-term liability (see Note 17).

Leasing arrangements where the Group is the lessee

Finance leases. At 31 December 2016 the capitalised cost of property, plant and equipment under finance leases was CHF 18 million (2015: CHF 42 million) and the net book value of these assets was CHF 8 million (2015: CHF 27 million). The carrying value of the leasing obligation was CHF 5 million (2015: CHF 5 million), which is reported as part of Debt (see Note 20).

Finance leases: future minimum lease payments under non-cancellable leases in millions of CHF

	Future minimum lease payments		Present value of minimum lease payments	
	2016	2015	2016	2015
Within one year	1	1	1	1
Between one and five years	4	4	4	4
More than five years	–	–	–	–
Total	**5**	**5**	**5**	**5**
Future finance charges	–	–	–	–
Total future minimum lease payments (undiscounted)	**5**	**5**	**5**	**5**

Operating leases. Group companies are party to a number of operating leases, mainly for property rentals and motor vehicles. The arrangements do not impose any significant restrictions on the Group. Total operating lease rental expense was CHF 458 million (2015: CHF 428 million).

Operating leases: future minimum lease payments under non-cancellable leases in millions of CHF

	2016	2015
Within one year	311	264
Between one and five years	664	573
More than five years	188	170
Total minimum payments	**1,163**	**1,007**

Leasing arrangements where the Group is the lessor

Finance leases. Certain assets, mainly Diagnostics instruments, are leased to third parties through finance lease arrangements. Such assets are reported as receivables at an amount equal to the net investment in the lease. Lease income from finance leases is recognised over the term of the lease based on the effective interest rate method.

Finance leases: future minimum lease receipts under non-cancellable leases in millions of CHF

	Gross investment in lease		Present value of minimum lease receipts	
	2016	2015	2016	2015
Within one year	39	43	34	37
Between one and five years	92	82	85	74
More than five years	4	2	3	2
Total	**135**	**127**	**122**	**113**
Unearned finance income	(12)	(12)	n/a	n/a
Unguaranteed residual value	n/a	n/a	1	2
Net investment in lease	**123**	**115**	**123**	**115**

The accumulated allowance for uncollectible minimum lease payments was CHF 1 million (2015: CHF 4 million).

Operating leases. Certain assets, mainly Diagnostics instruments, are leased to third parties through operating lease arrangements. Such assets are reported within property, plant and equipment. Lease income from operating leases is recognised over the lease term on a straight-line basis.

At 31 December 2016 machinery and equipment with an original cost of CHF 4.4 billion (2015: CHF 4.0 billion) and a net book value of CHF 1.5 billion (2015: CHF 1.5 billion) was being leased to third parties.

Operating leases: future minimum lease receipts under non-cancellable leases in millions of CHF

	2016	2015
Within one year	64	49
Between one and five years	86	77
More than five years	4	2
Total minimum receipts	**154**	**128**

Capital commitments

The Group has non-cancellable capital commitments for the purchase or construction of property, plant and equipment totalling CHF 1.4 billion (2015: CHF 1.6 billion).

8. Goodwill

Goodwill: movements in carrying value of assets in millions of CHF

	2016	2015
At 1 January		
Cost	12,342	11,361
Accumulated impairment	(1,260)	(1,431)
Net book value	**11,082**	**9,930**
Year ended 31 December		
At 1 January	11,082	9,930
Business combinations[5]	–	1,299
Impairment charge	(95)	–
Currency translation effects	295	(147)
At 31 December	**11,282**	**11,082**
Cost	12,655	12,342
Accumulated impairment	(1,373)	(1,260)
Net book value	**11,282**	**11,082**
Allocated to the following cash-generating units		
Roche Pharmaceuticals	5,241	5,176
Foundation Medicine[5]	101	98
Chugai	97	91
Total Pharmaceuticals Division	**5,439**	**5,365**
Diabetes Care	827	827
Centralised and Point of Care Solutions	1,785	1,731
Molecular Diagnostics	396	383
Tissue Diagnostics	–	–
Sequencing	700	677
Strategic goodwill (held at divisional level)	2,135	2,099
Total Diagnostics Division	**5,843**	**5,717**

Impairment charge – 2016

During 2016, a goodwill impairment charge of CHF 95 million was recorded in the Pharmaceuticals Division for the full write-off of goodwill from the Anadys Pharmaceuticals, Inc. acquisition in 2011 which is deemed to have been disposed of.

Impairment charge – 2015

There were no impairments of goodwill during 2015.

Impairment testing

Pharmaceuticals Division. The division's operating segments are the cash-generating units used for the testing of goodwill. Part of the goodwill arising from the Foundation Medicine acquisition is recorded and monitored at a Roche Pharmaceuticals level as it relates to the strategic development of Roche Pharmaceuticals. Therefore the cash-generating unit for this strategic goodwill is Roche Pharmaceuticals. The recoverable amount used in the impairment testing is the higher of value in use and fair value less costs of disposal. For Chugai and Foundation Medicine the fair value less costs of disposal is determined with reference to the publicly quoted share prices of Chugai and Foundation Medicine shares.

Diagnostics Division. The division's business areas are the cash-generating units used for the testing of goodwill. The goodwill arising from the Corange/Boehringer Mannheim acquisition and part of the goodwill from the Ventana acquisition is recorded and monitored at a divisional level as it relates to the strategic development of the whole division and cannot be meaningfully allocated to the division's business areas. Therefore the cash-generating unit for this goodwill is the entire division. The recoverable amount used in the impairment testing is based on value in use.

Value in use. This is calculated using a discounted expected cash flow approach, with a post-tax discount rate applied to the projected risk-adjusted post-tax cash flows and terminal value. The discount rate is the Group's weighted average cost of capital as the cash-generating units have integrated operations across large parts of the Group. It is derived from a capital asset pricing model using data from capital markets, including government twenty-year bonds. For assessing value in use, the cash flow projections are based on the most recent business plans approved by management. The business plans include management's latest estimates on sales volume and pricing, as well as production and other operating costs and assume no significant changes in the organisation. Other key assumptions used in the calculations are the period of cash flow projections included in the business plans, the terminal value growth rate and the discount rate.

Key assumptions used in value in use calculations

	2016			2015		
	Period of cash flow projections	Terminal value growth rate	Discount rate (after tax)	Period of cash flow projections	Terminal value growth rate	Discount rate (after tax)
Pharmaceuticals Division						
– Roche Pharmaceuticals	5 years	n/a	6.5%	5 years	n/a	7.0%
Diagnostics Division						
– Sequencing	10 years	1.5%	6.5%	10 years	0%	7.0%
– Other Diagnostics businesses	5 years	1.5%	6.5%	5 years	0%	7.0%

For cash-generating units with a terminal value growth, the respective rate does not exceed the long-term projected growth rate for the relevant market. The ten years period of cash flow projections reflects the long-term nature of the sequencing business.

Sensitivity analysis

Management has performed sensitivity analyses for Roche Pharmaceuticals and the Diagnostics Division, which increased the discount rate by 1% combined with decreasing the forecast cash flows by 5%, and for Chugai and Foundation Medicine, which decreased the publicly quoted share prices by 5%. The results of the sensitivity analyses demonstrated that the above changes in the key assumptions would not cause the carrying value of goodwill to exceed the recoverable amount at 31 December 2016.

9. Intangible assets

Intangible assets: movements in carrying value of assets in millions of CHF

	Product intangibles: in use	Product intangibles: not available for use	Marketing intangibles: in use	Technology intangibles: in use	Total
At 1 January 2015					
Cost	22,002	4,281	39	998	27,320
Accumulated amortisation and impairment	(12,259)	(1,577)	(34)	(651)	(14,521)
Net book value	**9,743**	**2,704**	**5**	**347**	**12,799**
Year ended 31 December 2015					
At 1 January 2015	9,743	2,704	5	347	12,799
Business combinations [5]	1,399	958	15	–	2,372
Additions	92	422	5	51	570
Divestment of subsidiary	(26)	–	–	–	(26)
Transfers	121	(121)	–	–	–
Amortisation charge	(1,595)	–	(1)	(76)	(1,672)
Impairment charge	(5)	(64)	–	–	(69)
Currency translation effects	(76)	(2)	(1)	(34)	(113)
At 31 December 2015	**9,653**	**3,897**	**23**	**288**	**13,861**
Cost	22,746	5,025	56	1,013	28,840
Accumulated amortisation and impairment	(13,093)	(1,128)	(33)	(725)	(14,979)
Net book value	**9,653**	**3,897**	**23**	**288**	**13,861**
Allocated by operating segment					
Roche Pharmaceuticals	7,925	2,720	–	236	10,881
Chugai	30	34	9	1	74
Diagnostics	1,698	1,143	14	51	2,906
Total Group	**9,653**	**3,897**	**23**	**288**	**13,861**
Year ended 31 December 2016					
At 1 January 2016	9,653	3,897	23	288	13,861
Additions	105	926	18	16	1,065
Disposal	–	–	–	–	–
Transfers	252	(252)	–	–	–
Amortisation charge	(1,700)	–	(5)	(78)	(1,783)
Impairment charge	(70)	(1,343)	–	–	(1,413)
Currency translation effects	220	91	1	4	316
At 31 December 2016	**8,460**	**3,319**	**37**	**230**	**12,046**
Cost	23,579	5,795	66	1,057	30,497
Accumulated amortisation and impairment	(15,119)	(2,476)	(29)	(827)	(18,451)
Net book value	**8,460**	**3,319**	**37**	**230**	**12,046**
Allocated by operating segment					
Roche Pharmaceuticals	7,089	2,045	3	182	9,319
Chugai	26	64	21	–	111
Diagnostics	1,345	1,210	13	48	2,616
Total Group	**8,460**	**3,319**	**37**	**230**	**12,046**

Significant intangible assets at 31 December 2016 in millions of CHF

	Operating segment	Net book value	Remaining amortisation period
Product intangibles in use			
InterMune acquisition	Roche Pharmaceuticals	5,767	5 years
Foundation Medicine acquisition	Roche Pharmaceuticals	459	8 years
Ariosa acquisition	Diagnostics	476	18 years
Kapa acquisition	Diagnostics	297	14 years
IQuum acquisition	Diagnostics	211	17 years
Product intangibles not available for use			
Trophos acquisition	Roche Pharmaceuticals	301	n/a
BioNTech licence transaction	Roche Pharmaceuticals	292	n/a
GeneWeave acquisition	Diagnostics	438	n/a
CMI acquisition	Diagnostics	290	n/a
Genia acquisition	Diagnostics	259	n/a
Technology intangibles in use			
Dutalys acquisition	Roche Pharmaceuticals	88	4 years

Classification of intangible asset amortisation and impairment expenses in millions of CHF

	Amortisation		Impairment	
	2016	2015	2016	2015
Cost of sales				
– Pharmaceuticals	(1,314)	(1,239)	–	–
– Diagnostics	(323)	(309)	(70)	–
Marketing and distribution				
– Pharmaceuticals	(3)	(1)	–	–
– Diagnostics	(2)	–	–	–
Research and development				
– Pharmaceuticals	(135)	(118)	(1,343)	(69)
– Diagnostics	(6)	(5)	–	–
Total	**(1,783)**	**(1,672)**	**(1,413)**	**(69)**

Internally generated intangible assets

The Group currently has no internally generated intangible assets from development as the criteria for the recognition as an asset are not met.

Intangible assets with indefinite useful lives

The Group currently has no intangible assets with indefinite useful lives.

Intangible assets not available for use

These mostly represent in-process research and development assets acquired either through in-licensing arrangements, business combinations or separate purchases. At 31 December 2016 approximately 70% (2015: 89%) of the projects in the Pharmaceuticals Division have known decision points within the next twelve months which in certain circumstances could lead to impairment. Due to the inherent uncertainties in the research and development processes, intangible assets not available for use are particularly at risk of impairment if the project is not expected to result in a commercialised product.

Intangible asset impairment

Impairment charges arise from changes in the estimates of the future cash flows expected to result from the use of the asset and its eventual disposal. Factors such as the presence or absence of competition, technical obsolescence or lower than anticipated sales for products with capitalised rights could result in shortened useful lives or impairment.

Impairment charges – 2016

Pharmaceuticals Division. Impairment charges totalling CHF 1,343 million were recorded which related to:
- A decision to stop development of one compound acquired as part of the Seragon acquisition following a clinical data assessment (CHF 885 million). The asset concerned, which was not yet being amortised, was fully written down.
- A delay in the development of the compound acquired as part of the Trophos acquisition following regulatory feedback (CHF 187 million). The asset concerned, which was not yet being amortised, was written down to its estimated recoverable value of CHF 301 million.
- A portfolio reassessment of one compound (CHF 162 million). The asset concerned, which was not yet being amortised, was fully written down.
- A clinical data assessment of two development projects with two different alliance partners (CHF 67 million). The assets concerned, which were not yet being amortised, were fully written down.
- A decision to stop development of three compounds (CHF 42 million). The assets concerned, which were not yet being amortised, were fully written down.

Diagnostics Division. Impairment charges totalling CHF 70 million were recorded which related to:
- Sequencing product intangibles in use (CHF 63 million) as a result of a decision to stop the product development, commercialisation and license agreement with an alliance partner. The asset concerned, which was being amortised, was fully written down.
- Tissue Diagnostics product intangibles in use (CHF 7 million) as a result of a strategic portfolio reassessment. The asset concerned, which was being amortised, was fully written down.

Impairment charges – 2015

Pharmaceuticals Division. Impairment charges totalling CHF 69 million were recorded which related to:
- Decisions to stop development of four compounds with different alliance partners (CHF 64 million). The assets concerned, which were not yet being amortised, were fully written down.
- A decision to stop one collaboration project with an alliance partner (CHF 5 million). The asset concerned, which was being amortised, was fully written down.

Potential commitments from alliance collaborations and purchase agreements within the next three years

The Group is party to in-licensing and similar arrangements with its alliance partners and intangible asset purchase agreements from third parties. These arrangements and purchase agreements may require the Group to make certain milestone or other similar payments dependent upon the achievement of agreed objectives or performance targets as defined in the collaboration and purchase agreements.

The Group's current estimate of future third-party commitments for such payments within the next three years is set out in the table below. These figures are undiscounted and are not risk-adjusted, meaning that they include all such potential payments that can arise assuming all projects currently in development are successful. The timing is based on the Group's current best estimate. These figures do not include any potential commitments within the Group, such as may arise between the Roche and Chugai businesses.

Potential future third-party collaboration and purchase payments at 31 December 2016 in millions of CHF

	Pharmaceuticals	Diagnostics	Group
Within one year	403	24	427
Between one and two years	663	15	678
Between two and three years	344	–	344
Total	**1,410**	**39**	**1,449**

10. Inventories

Inventories in millions of CHF

	2016	2015	2014
Raw materials and supplies	1,194	1,091	1,066
Work in process	114	133	180
Intermediates	5,372	5,458	5,396
Finished goods	1,880	1,485	1,520
Provision for slow-moving and obsolete inventory	(632)	(519)	(419)
Total inventories	**7,928**	**7,648**	**7,743**

Inventories expensed through cost of sales totalled CHF 11.1 billion (2015: CHF 10.2 billion). Inventory write-downs during the year resulted in an expense of CHF 772 million (2015: CHF 480 million).

11. Accounts receivable

Accounts receivable in millions of CHF

	2016	2015	2014
Trade receivables	9,416	9,011	9,729
Notes receivable	83	90	94
Other receivables	34	37	41
Allowances for doubtful accounts	(538)	(567)	(625)
Charge-backs and other allowances to be withheld upon settlement[2]	(235)	(242)	(236)
Total accounts receivable	**8,760**	**8,329**	**9,003**

Allowances for doubtful accounts: movements in recognised liability in millions of CHF

	2016	2015
At 1 January	(567)	(625)
Additional allowances created	(196)	(224)
Unused amounts reversed	151	174
Utilised during the year	72	62
Currency translation effects	2	46
At 31 December	**(538)**	**(567)**

Bad debt expenses recorded as marketing and distribution costs totalled CHF 10 million (2015: expense of CHF 38 million).

12. Marketable securities

Marketable securities in millions of CHF

	2016	2015	2014
Available-for-sale financial assets			
Equity securities	69	105	553
Debt securities	1,509	1,390	1,269
Money market instruments and time accounts over three months	3,366	3,945	6,139
Other investments	–	–	–
Total marketable securities	**4,944**	**5,440**	**7,961**

Marketable securities are held for fund management purposes and are primarily denominated in Swiss francs, US dollars and euros. Money market instruments are contracted to mature within one year of 31 December 2016.

Debt securities – contracted maturity in millions of CHF

	2016	2015	2014
Within one year	364	302	214
Between one and five years	906	959	918
More than five years	239	129	137
Total debt securities	**1,509**	**1,390**	**1,269**

13. Cash and cash equivalents

Cash and cash equivalents in millions of CHF

	2016	2015	2014
Cash – cash in hand and in current or call accounts	3,304	2,826	3,262
Cash equivalents – time accounts with a maturity of three months or less	859	905	480
Total cash and cash equivalents	**4,163**	**3,731**	**3,742**

14. Other non-current assets

Other non-current assets in millions of CHF

	2016	2015	2014
Available-for-sale investments – held at fair value [29]	249	219	177
Available-for-sale investments – held at cost	279	90	69
Loans receivable	7	11	11
Long-term trade receivables	27	16	18
Restricted cash	2	2	31
Other receivables	88	76	86
Total financial non-current assets	**652**	**414**	**392**
Long-term employee benefits	254	243	264
Other assets	394	302	326
Total non-financial non-current assets	**648**	**545**	**590**
Associates	–	–	–
Total other non-current assets	**1,300**	**959**	**982**

The available-for-sale investments are mainly equity investments in private biotechnology companies, which are kept as part of the Group's strategic alliance efforts. Some unquoted equity investments classified as available-for-sale are measured at cost, as their fair value cannot be measured reliably.

15. Other current assets

Other current assets in millions of CHF

	2016	2015	2014
Accrued interest income	51	52	57
Derivative financial instruments [29]	185	169	194
Restricted cash	8	–	4
Other receivables	1,105	1,307	1,102
Total financial current assets	**1,349**	**1,528**	**1,357**
Prepaid expenses	544	508	472
Other taxes recoverable	482	529	399
Other assets	165	230	193
Total non-financial current assets	**1,191**	**1,267**	**1,064**
Total other current assets	**2,540**	**2,795**	**2,421**

Other receivables are mainly related to royalty and licensing income receivables.

16. Accounts payable

Accounts payable in millions of CHF

	2016	2015	2014
Trade payables	2,689	2,449	2,147
Other taxes payable	402	405	445
Dividends payable	2	2	45
Other payables	282	351	246
Total accounts payable	**3,375**	**3,207**	**2,883**

17. Other non-current liabilities

Other non-current liabilities in millions of CHF

	2016	2015	2014
Deferred income	91	78	96
Other long-term liabilities	441	427	155
Total other non-current liabilities	**532**	**505**	**251**

Other long-term liabilities are mainly related to accrued employee benefits and the long-term Genentech property purchase option exercise obligation (see Note 7).

18. Other current liabilities

Other current liabilities in millions of CHF

	2016	2015	2014
Deferred income	184	171	198
Accrued payroll and related items	2,356	2,402	2,253
Interest payable	289	445	547
Derivative financial instruments [29]	447	639	673
Accrued charge-backs and other allowances separately payable [2]	1,704	1,458	1,367
Accrued royalties and commissions	974	1,073	1,066
Other accrued liabilities	2,924	3,009	2,673
Total other current liabilities	**8,878**	**9,197**	**8,777**

At 31 December 2015 other accrued liabilities included CHF 297 million for the short-term Genentech property purchase option exercise obligation, which was paid in November 2016 (see Note 7).

19. Provisions and contingent liabilities

Provisions: movements in recognised liabilities in millions of CHF

	Legal provisions	Environmental provisions	Restructuring provisions	Employee provisions	Other provisions	Total
Year ended 31 December 2015						
At 1 January 2015	677	627	606	385	1,948	4,243
Additional provisions created	60	130	429	130	571	1,320
Unused amounts reversed	(15)	(1)	(63)	(8)	(255)	(342)
Utilised	(17)	(153)	(319)	(107)	(239)	(835)
Discount unwind [3]	–	12	–	1	40	53
Business combinations						
– Acquired companies	–	–	–	–	–	–
– Deferred consideration [5]	–	–	–	–	(55)	(55)
– Contingent consideration [29]	–	–	–	–	448	448
Other movements [25]	–	–	–	(72)	–	(72)
Currency translation effects	(5)	(30)	(32)	(16)	(41)	(124)
At 31 December 2015	**700**	**585**	**621**	**313**	**2,417**	**4,636**
Current	670	195	284	118	1,165	2,432
Non-current	30	390	337	195	1,252	2,204
At 31 December 2015	**700**	**585**	**621**	**313**	**2,417**	**4,636**
Year ended 31 December 2016						
At 1 January 2016	700	585	621	313	2,417	4,636
Additional provisions created	59	38	405	95	372	969
Unused amounts reversed	(23)	–	(110)	(4)	(712)	(849)
Utilised	(53)	(119)	(240)	(67)	(283)	(762)
Discount unwind [3]	–	10	–	2	53	65
Business combinations						
– Acquired companies	–	–	–	–	–	–
– Deferred consideration [5]	–	–	–	–	(5)	(5)
– Contingent consideration [29]	–	–	–	–	(69)	(69)
Other movements [25]	–	–	–	–	–	–
Currency translation effects	22	4	(2)	6	33	63
At 31 December 2016	**705**	**518**	**674**	**345**	**1,806**	**4,048**
Current	677	111	376	126	981	2,271
Non-current	28	407	298	219	825	1,777
At 31 December 2016	**705**	**518**	**674**	**345**	**1,806**	**4,048**
Expected outflow of resources						
Within one year	677	111	376	126	981	2,271
Between one and two years	22	101	85	41	143	392
Between two and three years	2	93	68	32	215	410
More than three years	4	213	145	146	467	975
At 31 December 2016	**705**	**518**	**674**	**345**	**1,806**	**4,048**

Legal provisions

Legal provisions consist of a number of separate legal matters, including claims arising from trade, in various Group companies. By their nature the amounts and timings of any outflows are difficult to predict.

In 2016 legal expenses totalled CHF 39 million (2015: CHF 41 million) which reflect the recent developments in various legal matters. Details of the major legal cases outstanding are disclosed below.

Environmental provisions

Provisions for environmental matters include various separate environmental issues in a number of countries. By their nature the amounts and timings of any outflows are difficult to predict. Significant provisions are discounted by between 1% and 4% where the time value of money is material. The significant provisions relate to the US site in Nutley, New Jersey, which was divested in September 2016, the estimated remediation costs for a landfill site near Grenzach, Germany that was used by manufacturing operations that were closed some years ago and the estimated remediation costs for the manufacturing site at Clarecastle, Ireland. As part of the divestment of the Nutley site, the expected costs of environmental remediation were reassessed and accordingly the environmental provisions were increased by CHF 24 million.

Restructuring provisions

These arise from planned programmes that materially change the scope of business undertaken by the Group or the manner in which business is conducted. Such provisions include only the costs necessarily entailed by the restructuring which are not associated with the recurring activities of the Group. The timings of these cash outflows are reasonably certain. These provisions are not discounted as the time value of money is not material in these matters.

In the Pharmaceuticals Division the significant provisions relate to the strategic realignment of the manufacturing network including exiting from four manufacturing sites (see Note 6), the research and development strategic alignment and the outsourcing of IT functions to shared service centres and external providers.

Employee provisions

These mostly relate to certain employee benefit obligations, such as sabbatical leave and long-service benefits. The timings of these cash outflows can be reasonably estimated based on past experience.

Other provisions

The timing of cash outflows is by its nature uncertain and other provisions relate to the items shown in the table below.

Other provisions in millions of CHF

	2016	2015	2014
Contingent consideration [29]	1,089	1,492	815
Sales returns	436	616	706
Other items	281	309	427
Total other provisions	**1,806**	**2,417**	**1,948**

Contingent liabilities

The operations and earnings of the Group continue, from time to time and in varying degrees, to be affected by political, legislative, fiscal and regulatory developments, including those relating to environmental protection, in the countries in which it operates. The industries in which the Group operates are also subject to other risks of various kinds. The nature and frequency of these developments and events, not all of which are covered by insurance, as well as their effect on future operations and earnings, are not predictable.

The Group has entered into strategic alliances with various companies in order to gain access to potential new products or to utilise other companies to help develop the Group's own potential new products. Potential future payments may become due to certain collaboration partners achieving certain milestones as defined in the collaboration agreements. The Group's best estimates of future commitments for such payments are given in Note 9.

Pharmaceuticals legal cases

At 31 December 2016 provisions for legal cases in the Pharmaceuticals Division were CHF 592 million (2015: CHF 599 million). Provisions have been recorded, and in some cases settled, mainly relating to the matters listed below.

Accutane. Hoffmann-La Roche Inc. ('HLR') and various other Roche affiliates have been named as defendants in numerous legal actions in the US and elsewhere relating to the acne medication Accutane. The litigation alleges that Accutane caused certain serious conditions, including, but not limited to, inflammatory bowel disease ('IBD'), birth defects and psychiatric disorders. In 2009 HLR announced that, following a re-evaluation of its portfolio of medicines that are now available from generic manufacturers, rapidly declining brand sales in the US and high costs from personal-injury lawsuits that it continues to defend vigorously, it had decided to immediately discontinue the manufacture and distribution of the product in the US.

All of the actions pending in federal court alleging IBD were consolidated for pre-trial proceedings in a Multi-District Litigation ('MDL') in the US District Court for the Middle District of Florida, Tampa Division. In August 2015 the MDL was closed. During the pendency of the MDL the District Court granted summary judgment in favour of HLR for all of the federal IBD cases that had proceeded and all were affirmed by the US Court of Appeals for the Eleventh Circuit. All of the actions pending in state court in New Jersey alleging IBD were consolidated for pre-trial proceedings in the Superior Court of New Jersey, Law Division, Atlantic County.

Since 1 January 2016 there have been approximately 3,400 cases dismissed in the US. At 31 December 2016 there are approximately 2,900 dismissed cases on appeal and HLR was defending approximately 3,500 actions involving approximately 3,590 plaintiffs brought in various federal and state courts throughout the US for personal injuries allegedly resulting from their use of Accutane.

In February 2015 the Superior Court of New Jersey, Law Division, Atlantic County, held an eight-day evidentiary hearing on whether plaintiffs' experts can testify that Accutane causes Crohn's disease. On 20 February 2015 the Superior Court barred plaintiffs' experts because their methods did not meet the requirements for scientific reliability. On 8 May 2015 the Superior Court entered an order dismissing with prejudice an agreed-upon list of 2,076 Crohn's disease cases that were subject to the Superior Court's February 2015 order. On 12 May 2015 the Superior Court entered an order granting summary judgment and dismissing 18 cases filed by New Jersey residents on the basis that the drug label was adequate as a matter of law since 2002. In July 2015 the Superior Court granted HLR's motion for summary judgment as to the adequacy of the label for post-2002 ingestion cases in 44 other jurisdictions. The Superior Court applied New Jersey law to all of the jurisdictions and granted HLR's motion dismissing approximately 511 cases. In the alternative, the Superior Court applied the home state law and granted summary judgment in 24 jurisdictions and denied it in 20 jurisdictions; this would have resulted in 389 cases being dismissed. In January and October 2016, the Superior Court entered orders granting summary judgment and dismissing 191 cases for failure to prove Accutane proximately caused their ulcerative colitis. The plaintiffs have appealed all of these decisions.

At 31 December 2016 juries in the New Jersey Superior Court have ruled in favour of the plaintiff in eight cases, assessing compensatory damages totalling USD 59 million. For the eight cases that were ruled in favour of the plaintiff by the Superior Court, one case has been settled and seven cases have had their verdicts reversed in favour of HLR (USD 57 million), of which one case (USD 25 million) is on appeal to the New Jersey Appellate Division.

The Superior Court of New Jersey, Law Division, Atlantic County, has scheduled a February 2017 evidentiary hearing on whether plaintiffs' experts can testify that Accutane causes ulcerative colitis. If any cases survive the hearing, additional trials may be scheduled for 2017. Individual trial results depend on a variety of factors, including many that are unique to the particular case and therefore the trial results to date may not be predictive of future trial results. The Group continues to defend vigorously the remaining personal injury cases and claims.

Avastin/Lucentis investigations. On 14 February 2013 the Italian Antitrust Authority ('AGCM') announced an investigation to determine whether Roche, Genentech and Novartis had entered into an agreement to restrict competition in the Italian market for drugs, with reference in particular to Avastin (marketed by Roche) and Lucentis (marketed by Novartis). Avastin and Lucentis are two different drugs that were developed and approved for different therapeutic purposes and contain different active pharmaceutical ingredients. On 5 March 2014 the AGCM issued a verdict that alleges that Roche and Novartis colluded to artificially differentiate Avastin and Lucentis in order to foster the sales of Lucentis in Italy. The AGCM fined Roche EUR 90.5 million and Novartis EUR 92 million. Roche appealed the AGCM verdict to the Tribunale Amministrativo Regionale del Lazio ('TAR'). On 2 December 2014 the TAR upheld the decision by the AGCM. Roche strongly disagrees with the verdict of the TAR and has appealed. On 30 May 2014 the Italian Ministry of Health notified Roche S.p.A. of its intention to seek damages related to this matter. In July 2014 Roche paid the EUR 90.5 million fine under protest to avoid additional penalty fees and recorded an expense within general and administration. The fine and related interest will be reimbursed if Roche wins the case. The outcome of these matters cannot be determined at this time.

Tarceva subpoena. On 2 November 2011 Genentech received a subpoena from the US Department of Justice ('DOJ'), requesting documents and information related to the promotion of Tarceva, a prescription product initially approved for the treatment of locally advanced or metastatic non-small cell lung cancer after failure of at least one prior chemotherapy regimen, and later approved for additional indications. Genentech is cooperating with the associated investigation. On 6 May 2014 government representatives presented for the first time the government's civil liability theory, specifically that Genentech allegedly participated in the off-label promotion of Tarceva causing the submission of false claims for reimbursement under the Civil False Claims Act. On 14 August 2015 the government closed its criminal investigation against Genentech. On 6 June 2016 Genentech executed settlement agreements with the US Department of Justice and all of the States resolving the civil investigation. The matter with the Federal Government and all of the States is now concluded.

Rituxan arbitration. In October 2008 Genentech and Biogen Idec Inc. filed a complaint in California against Sanofi-Aventis Deutschland GmbH, Sanofi-Aventis US LLC and Sanofi-Aventis US Inc. ('Sanofi') seeking a declaratory judgment that certain Genentech products, including Rituxan, do not infringe Sanofi's US Patent Nos. 5,849,522 and 6,218,140 and that the '522 and '140 patents are invalid. Sanofi alleged that Rituxan and another Genentech product infringe certain claims of the '522 and '140 patents. In March 2011 the district court ruled as a matter of law that Genentech and Biogen Idec do not infringe the asserted patent claims. In May 2011 Sanofi appealed the court's non-infringement ruling. The appellate court affirmed the district court's judgment of no patent infringement.

In addition, in October 2008 Sanofi affiliate Hoechst GmbH ('Hoechst') filed with the ICC International Court of Arbitration (Paris) a request for arbitration with Genentech, relating to a terminated patent-licence agreement between one of Hoechst's predecessors and Genentech that pertained to the above-mentioned patents and related patents outside the US. Hoechst sought payment of patent-licence royalties on sales of certain Genentech products, including Rituxan, damages for breach of contract, and other relief. In various arbitral awards in September 2012 and February 2013, the arbitrator found Genentech liable to Hoechst for patent-licence royalties on Rituxan, and he awarded the royalties and interest that Hoechst had sought. In February 2013 the Group recorded a back royalty expense of CHF 42 million, net of the assumed reimbursement of a portion of the Group's obligation by its co-promotion partner in the US.

Hoechst initiated proceedings in the US, France and Germany seeking to enforce the arbitral awards. In October 2013 Genentech paid the awarded royalties and interest to Hoechst under protest. Genentech is seeking annulment of the arbitral awards through proceedings it initiated in the Court of Appeal of Paris. There was a hearing in those proceedings in June 2014. In September 2014 the Paris Court of Appeal stayed the annulment proceedings to seek guidance from the EU Court of Justice on a specific legal question that had been raised by Genentech relating to the arbitral award's non-compliance under EU competition laws. In November 2014 Hoechst filed notices of appeal to the French Supreme Court seeking to review the Paris Court of Appeal's decision to seek guidance from the EU Court of Justice. On 18 November 2015 the French Supreme Court denied Hoechst's challenge to the decision of the Paris Court of Appeals to refer the specific legal question to the EU Court of Justice. On 7 July 2016 the EU Court of Justice issued its opinion in the case, finding that where a licensee may freely terminate a licence, the licence is not anti-competitive. The case is proceeding at the Paris Court of Appeal and a hearing is expected in the first half of 2017. The outcome of this matter cannot be determined at this time.

Average Wholesale Prices litigation. HLR and Roche Laboratories Inc. ('RLI'), along with approximately 50 other brand and generic pharmaceutical companies, have been named as defendants in several legal actions in the US relating to the pricing of pharmaceutical drugs and State Medicaid reimbursement. The primary allegation in these litigations is that the pharmaceutical companies misrepresented or otherwise reported inaccurate Average Wholesale Prices ('AWP') and/or Wholesale Acquisition Costs ('WAC') for their drugs, which prices were allegedly relied upon by the States in calculating Medicaid reimbursements to entities such as retail pharmacies. The states, through their respective Attorney General, are seeking repayment of the amounts they claim were over-reimbursed. The time period associated with these cases is 1991 through 2005. At 31 December 2016 HLR and RLI are defending one AWP action filed in the state of New Jersey. HLR and RLI are vigorously defending themselves and no trial date has been set. The outcome of this matter cannot be determined at this time.

In addition, the matters listed below do not currently have provisions recorded, but there are potential future obligations which will be confirmed only by the occurrence or non-occurrence of uncertain future events or where the obligation cannot be measured with sufficient reliability.

Boniva litigation. HLR, Genentech and various other Roche affiliates (collectively 'Roche') have been named as defendants in numerous legal actions in the US and one now dismissed case in Canada relating to the post-menopausal osteoporosis medication Boniva. In these litigations, the plaintiffs allege that Boniva caused either osteonecrosis of the jaw or atypical femoral fractures. At 31 December 2016 Roche is defending approximately 260 actions involving approximately 305 plaintiffs brought in federal and state courts throughout the US for personal injuries allegedly resulting from the use of Boniva. All of these cases are in the early discovery stages of litigation. Individual trial results depend on a variety of factors, including many that are unique to the particular case. Roche is vigorously defending itself in these matters. The outcome of these matters cannot be determined at this time.

EMA investigation. On 23 October 2012 the European Medicines Agency ('EMA') announced that it would start an infringement procedure to investigate allegations regarding an alleged breach of medicines safety reporting obligations in relation to 19 centrally authorised medicines. On 19 November 2013 the EMA announced the results of the Pharmacovigilance Risk Assessment Committee assessment of Roche's medicines. The EMA found no impact regarding the benefit-risk balance of any of Roche's medicines and confirmed the benefit-risk profiles based on available safety information. The EMA and other health authorities have confirmed all medicines remain authorised without changes to the treatment advice for patients and healthcare professionals. All corrective and preventative actions resulting from the inspections are being implemented. A re-inspection by authorities in November 2013 led to certain findings which Roche is now addressing. On 14 April 2014 the EMA issued its report to the European Commission that summarises the EMA's findings in relation to the investigation. On 6 July 2015 the European Commission issued a notification to the EMA, returning the case file to the EMA for a new period of inquiry. On 4 July 2016 the EMA announced that it had concluded its second inquiry and sent, on 1 July 2016, the final updated report to the European Commission. The European Commission will now decide whether the matter should be pursued and financial penalties should be imposed. The decision of the European Commission on this matter is still pending. The outcome of this matter cannot be determined at this time.

20. Debt

Debt: movements in carrying value of recognised liabilities in millions of CHF

	2016	2015
At 1 January	23,251	25,714
Proceeds from issue of bonds and notes	3,158	2,663
Redemption and repurchase of bonds and notes	(3,985)	(4,058)
Increase (decrease) in commercial paper	(454)	(791)
Increase (decrease) in other debt	(133)	130
Net (gains) losses on redemption and repurchase of bonds and notes [3]	142	79
Loss on major debt restructuring [3]	–	381
Amortisation of debt discount [3]	19	19
Business combinations [5]	–	14
Net foreign currency transaction (gains) losses	(93)	(448)
Currency translation effects and other	450	(452)
At 31 December	**22,355**	**23,251**
Bonds and notes	19,644	20,007
Commercial paper	2,116	2,501
Amounts due to banks and other financial institutions	570	717
Finance lease obligations [7]	5	5
Other borrowings	20	21
Total debt	**22,355**	**23,251**
Long-term debt	16,992	17,100
Short-term debt	5,363	6,151
Total debt	**22,355**	**23,251**

There are no pledges on the Group's assets in connection with debt.

Bonds and notes

Recognised liabilities and effective interest rates of bonds and notes in millions of CHF

	Effective interest rate Underlying instrument	Effective interest rate Including hedging	2016	2015	2014
US dollar notes – fixed rate					
1.35% notes due 29 September 2017, principal USD 0.85 billion (ISIN: US771196BC54)	1.41%	0.70%	869	842	841
6.0% notes due 1 March 2019, principal USD 4.5 billion (ISIN: USU75000AM82 and US771196AS16)	6.37%	6.03%	–	1,499	2,606
2.25% notes due 30 September 2019, principal USD 1.5 billion (ISIN: US771196BA98)	2.34%	1.06%	1,545	1,501	1,493
2.875% notes due 29 September 2021, principal USD 1.3 billion (ISIN: US771196BB71)	2.98%	n/a	1,325	1,280	1,279
1.75% notes due 28 January 2022, principal USD 0.65 billion (ISIN: US771196BM37)	1.87%	1.61%	660	–	–
3.35% notes due 30 September 2024, principal USD 1.65 billion (ISIN: US771196BE11)	3.40%	n/a	1,685	1,629	1,629
3.0% notes due 10 November 2025, principal USD 1.0 billion (ISIN: US771196BJ08)	3.14%	n/a	1,014	979	–
2.625% notes due 15 May 2026, principal USD 1.0 billion (ISIN: US771196BK70)	2.78%	n/a	1,011	–	–
2.375% notes due 28 January 2027, principal USD 0.85 billion (ISIN: US771196BL53)	2.54%	n/a	858	–	–
7.0% notes due 1 March 2039, principal USD 2.5 billion, outstanding USD 1.19 billion (ISIN: USU75000AN65 and US771196AU61)	7.43%	7.36%	1,167	1,213	1,536
4.0% notes due 28 November 2044, principal USD 0.65 billion (ISIN: US771196BH42)	4.16%	n/a	652	630	630
US dollar notes – floating rate					
Notes due 29 September 2017, principal USD 0.3 billion (ISIN: US771196BD38)	0.69%	n/a	307	296	296
Notes due 30 September 2019, principal USD 0.5 billion (ISIN: US771196AZ58)	1.05%	n/a	511	494	494
Euro Medium Term Note programme – fixed rate					
5.5% notes due 4 March 2015, principal GBP 1.25 billion (ISIN: XS0415625283)	5.70%	5.78%	–	–	739
5.625% notes due 4 March 2016, principal EUR 2.75 billion (ISIN: XS0415624120)	5.70%	6.36%	–	2,270	2,523
2.0% notes due 25 June 2018, principal EUR 1.0 billion (ISIN: XS0760139773)	2.07%	n/a	1,072	1,079	1,200
2.0% notes due 13 March 2020, principal USD 0.6 billion (ISIN: XS1197832089)	2.12%	1.16%	613	595	–
6.5% notes due 4 March 2021, principal EUR 1.75 billion, outstanding EUR 1.32 billion (ISIN: XS0415624716)	6.66%	6.96%	1,408	1,415	2,090
0.5% notes due 27 February 2023, principal EUR 0.65 billion (ISIN: XS1371715118)	0.63%	n/a	692	–	–
5.375% notes due 29 August 2023, principal GBP 0.25 billion, outstanding GBP 0.20 billion (ISIN: XS0175478873)	5.46%	n/a	249	291	305
0.875% notes due 25 February 2025, principal EUR 1.0 billion (ISIN: XS1195056079)	0.93%	n/a	1,069	1,076	–
Swiss franc bonds – fixed rate					
4.5% bonds due 23 March 2017, principal CHF 1.5 billion (ISIN: CH0039139263)	4.77%	n/a	1,499	1,495	1,492
1.0% bonds due 21 September 2018, principal CHF 0.6 billion (ISIN: CH0180513068)	1.04%	0.87%	602	603	602
1.625% bonds due 23 September 2022, principal CHF 0.5 billion (ISIN: CH0180513183)	1.64%	1.37%	504	499	499
Genentech Senior Notes					
4.75% Senior Notes due 15 July 2015, principal USD 1.0 billion (ISIN: US368710AG46)	4.87%	n/a	–	–	989
5.25% Senior Notes due 15 July 2035, principal USD 0.5 billion, outstanding USD 0.325 billion (ISIN: US368710AC32)	5.39%	n/a	332	321	346
Total bonds and notes			**19,644**	**20,007**	**21,589**

Bonds and notes maturity in millions of CHF

	2016	2015	2014
Within one year	2,675	2,931	2,409
Between one and two years	1,674	2,634	2,523
Between two and three years	2,055	1,682	2,629
Between three and four years	613	2,832	1,802
Between four and five years	2,733	595	3,912
More than five years	9,894	9,333	8,314
Total bonds and notes	**19,644**	**20,007**	**21,589**

Unamortised discount included in carrying value of bonds and notes in millions of CHF

	2016	2015	2014
US dollar notes	102	85	103
Euro notes	17	15	19
Swiss franc bonds	2	9	10
Pound sterling notes	2	2	3
Total unamortised discount	**123**	**111**	**135**

Issuance of bonds and notes – 2016

On 26 February 2016 the Group issued EUR 650 million fixed rate notes with a coupon of 0.5% under the Euro Medium Term Note programme. The notes will mature on 27 February 2023 and are listed on the Luxembourg Stock Exchange. The Group received CHF 703 million aggregate net proceeds from the issuance and sale of these fixed notes.

On 1 March 2016 the Group completed an offering of USD 1.0 billion fixed rate notes with a coupon of 2.625%. The notes will mature on 15 May 2026. The Group received CHF 987 million aggregate net proceeds from the issuance and sale of these fixed notes.

On 31 October 2016 the Group completed an offering of USD 650 million and USD 850 million fixed rate notes with a coupon of 1.75% and 2.375%, respectively. The notes will mature on 28 January 2022 and 28 January 2027, respectively. The Group received CHF 1,468 million aggregate net proceeds from the issuance and sale of these fixed notes.

Issuance of bonds and notes – 2015

On 25 February 2015 the Group issued EUR 1.0 billion fixed rate notes with a coupon of 0.875% under the Euro Medium Term Note programme. The notes will mature on 25 February 2025 and are listed on the Luxembourg Stock Exchange. The Group received CHF 1,072 million aggregate net proceeds from the issuance and sale of these fixed notes.

On 13 March 2015 the Group issued USD 600 million fixed rate notes with a coupon of 2.0% under the Euro Medium Term Note programme. The notes will mature on 13 March 2020 and are listed on the Luxembourg Stock Exchange. The Group received CHF 598 million aggregate net proceeds from the issuance and sale of these fixed notes.

On 10 November 2015 the Group completed an offering of USD 1.0 billion fixed rate notes with a coupon of 3.0%. The notes will mature on 10 November 2025. The Group received CHF 993 million aggregate net proceeds from the issuance and sale of these fixed notes.

Major debt restructuring. In September 2015 the Group decided to do a major debt restructuring. The Group raised net proceeds of CHF 993 million through the debt offering described above. All newly issued debt is senior, unsecured and has been guaranteed by Roche Holding Ltd. The Group repurchased USD 337 million 7.0% fixed rate notes due 1 March 2039, USD 543 million 6.0% fixed rate notes due 1 March 2019, USD 25 million 5.25% fixed rate Genentech Senior Notes due 15 July 2035 and EUR 433 million 6.5% fixed rate notes due 4 March 2021. This major debt restructuring resulted in a loss on repurchase of CHF 381 million.

Redemption and repurchase of bonds and notes – 2016

Redemption of US dollar denominated notes. On 30 December 2015 the Group resolved to exercise its option to call for early partial redemption of the 6.0% fixed rate notes due 1 March 2019. On 24 March 2016 the Group redeemed an outstanding principal of USD 600 million at an amount equal to the sum of the present values of the remaining scheduled payments of these notes discounted to the redemption date at the US Treasury rate plus 0.50%, together with accrued and unpaid interest on the principal. The cash outflow was CHF 660 million, plus accrued interest. At 31 December 2015 the Group revised the carrying value of these notes to take into account the changes to the amounts and timings of the estimated cash flows which resulted in an increase in carrying value of USD 74 million (CHF 72 million) which was recorded within financing costs (see Note 3) as a loss on redemption. In 2016 there was an additional CHF 4 million loss recorded on redemption. The effective interest rate of these notes was 6.37%.

On 22 June 2016 the Group resolved to exercise its option to call for early partial redemption of the 6.0% fixed rate notes due 1 March 2019. On 25 August 2016 the Group redeemed an outstanding principal of USD 857 million at an amount equal to the sum of the present values of the remaining scheduled payments of these notes discounted to the redemption date at the US Treasury rate plus 0.50%, together with accrued and unpaid interest on the principal. The cash outflow was CHF 924 million, plus accrued interest and there was a loss on redemption of CHF 99 million. The effective interest rate of these notes was 6.37%.

On 19 December 2016 the Group completed a tender offer to repurchase USD 80 million of the 7.0% fixed rate notes due 1 March 2039. The cash outflow was CHF 118 million, plus accrued interest and there was a loss on repurchase of CHF 39 million. The effective interest rate of these notes was 7.43%.

Redemption of euro notes. On the due date of 4 March 2016 the Group redeemed the 5.625% fixed rate notes with a principal of EUR 2.1 billion. The cash outflow was CHF 2,283 million, plus accrued interest. The effective interest rate of these notes was 5.70%.

Redemption and repurchase of bonds and notes – 2015

Partial redemption of US dollar notes. On 19 December 2014 the Group resolved to exercise its option to call for early partial redemption of the 6.0% fixed rate notes due 1 March 2019. On 26 March 2015 the Group redeemed an outstanding principal of USD 600 million at an amount equal to the sum of the present values of the remaining scheduled payments of these notes discounted to the redemption date at the US Treasury rate plus 0.50%, together with accrued and unpaid interest on the principal. The cash outflow was CHF 669 million, plus accrued interest and there was an additional CHF 7 million loss recorded on redemption. The effective interest rate of these notes was 6.37%.

On 24 September 2015 the Group completed a tender offer to repurchase USD 337 million of the 7.0% fixed rate notes due 1 March 2039. The cash outflow was CHF 480 million, plus accrued interest and there was a loss on repurchase of CHF 158 million. The effective interest rate of these notes was 7.43%.

On 24 September 2015 the Group completed a tender offer to repurchase USD 543 million of the 6.0% fixed rate notes due 1 March 2019. The cash outflow was CHF 607 million, plus accrued interest and there was a loss on repurchase of CHF 78 million. The effective interest rate of these notes was 6.37%.

Redemption of pound sterling notes. On the due date of 4 March 2015 the Group redeemed the 5.5% fixed rate notes with a principal of GBP 481 million. The cash outflow was CHF 710 million, plus accrued interest. The effective interest rate of these notes was 5.70%.

Redemption of Genentech Senior Notes. On the due date of 15 July 2015 the Group redeemed the 4.75% fixed rate Senior Notes with a principal of USD 1.0 billion. The cash outflow was CHF 945 million, plus accrued interest. The effective interest rate of these notes was 4.87%.

Partial repurchase of Genentech Senior Notes. On 24 September 2015 the Group repurchased USD 25 million of the 5.25% fixed rate Senior Notes due on 15 July 2035. The cash outflow was CHF 29 million, plus accrued interest and there was a loss on repurchase of CHF 4 million. The effective interest rate of these notes was 5.39%.

Partial repurchase of euro notes. On 6 November 2015 the Group repurchased EUR 433 million of the 6.5% fixed rate notes due on 4 March 2021. The cash outflow was CHF 618 million, plus accrued interest and there was a loss on repurchase of CHF 141 million. The effective interest rate of these notes was 6.66%.

Cash flows from issuance, redemption and repurchase of bonds and notes

Cash inflows from issuance of bonds and notes in millions of CHF

	2016	2015
Euro Medium Term Note programme – Euro notes	703	1,072
Euro Medium Term Note programme – US dollar notes	–	598
US dollar notes	2,455	993
Total cash inflows from issuance of bonds and notes	**3,158**	**2,663**

Cash outflows from redemption and repurchase of bonds and notes in millions of CHF

	2016	2015
Euro Medium Term Note programme – Pound sterling notes	–	(710)
Euro Medium Term Note programme – Euro notes	(2,283)	(618)
US dollar notes	(1,702)	(2,730)
Total cash outflows from redemption and repurchase of bonds and notes	**(3,985)**	**(4,058)**

Commercial paper

Roche Holdings, Inc. commercial paper program. Roche Holdings, Inc. has an established commercial paper program under which it can issue up to USD 7.5 billion of unsecured commercial paper notes guaranteed by Roche Holding Ltd. The total committed credit lines that are available as a back-stop supporting the commercial paper program are USD 7.5 billion at 31 December 2016. The maturity of the notes under the program cannot exceed 365 days from the date of issuance. At 31 December 2016 unsecured commercial paper notes with a principal amount of USD 2.1 billion and an average interest rate of 0.58% were outstanding.

Movements in commercial paper obligations in millions of CHF

	2016	2015
At 1 January	2,501	3,314
Net cash proceeds (payments)	(454)	(791)
Currency translation effects	69	(22)
At 31 December	**2,116**	**2,501**

Amounts due to banks and other financial institutions

These amounts are denominated in various currencies, notably in Chinese renminbi, and the average interest rate was 4.12% (2015: 4.95%). At 31 December 2016 the amounts outstanding of CHF 570 million (2015: CHF 717 million) are due within one year.

21. Equity attributable to Roche shareholders

Changes in equity attributable to Roche shareholders in millions of CHF

			Reserves			
	Share capital	Retained earnings	Fair value	Hedging	Translation	Total
Year ended 31 December 2015						
At 1 January 2015	160	26,152	166	76	(6,968)	19,586
Net income recognised in income statement	–	8,863	–	–	–	8,863
Available-for-sale investments						
– Fair value gains (losses) taken to equity	–	–	94	–	–	94
– Transferred to income statement	–	–	(117)	–	–	(117)
– Income taxes [4]	–	–	17	–	–	17
– Non-controlling interests	–	–	(6)	–	–	(6)
Cash flow hedges						
– Gains (losses) taken to equity	–	–	–	(466)	–	(466)
– Transferred to income statement [a)]	–	–	–	382	–	382
– Income taxes [4]	–	–	–	29	–	29
– Non-controlling interests	–	–	–	5	–	5
Currency translation of foreign operations						
– Exchange differences	–	–	1	1	(1,009)	(1,007)
– Non-controlling interests	–	–	–	–	23	23
Defined benefit plans						
– Remeasurement gains (losses) [25]	–	353	–	–	–	353
– Limit on asset recognition [25]	–	(14)	–	–	–	(14)
– Income taxes [4]	–	(110)	–	–	–	(110)
– Non-controlling interests	–	5	–	–	–	5
Other comprehensive income, net of tax	**–**	**234**	**(11)**	**(49)**	**(986)**	**(812)**
Total comprehensive income	**–**	**9,097**	**(11)**	**(49)**	**(986)**	**8,051**
Dividends	–	(6,807)	–	–	–	(6,807)
Equity compensation plans, net of transactions in own equity	–	155	–	–	–	155
Changes in non-controlling interests [5]	–	(6)	–	–	–	(6)
At 31 December 2015	**160**	**28,591**	**155**	**27**	**(7,954)**	**20,979**

a) The entire amount transferred to the income statement was reported in 'Other financial income (expense)'.

Changes in equity attributable to Roche shareholders in millions of CHF

	Share capital	Retained earnings	Reserves: Fair value	Reserves: Hedging	Reserves: Translation	Total
Year ended 31 December 2016						
At 1 January 2016	160	28,591	155	27	(7,954)	20,979
Net income recognised in income statement	–	9,576	–	–	–	9,576
Available-for-sale investments						
– Fair value gains (losses) taken to equity	–	–	110	–	–	110
– Transferred to income statement	–	–	(97)	–	–	(97)
– Income taxes [4]	–	–	7	–	–	7
– Non-controlling interests	–	–	6	–	–	6
Cash flow hedges						
– Gains (losses) taken to equity	–	–	–	29	–	29
– Transferred to income statement [a)]	–	–	–	52	–	52
– Income taxes [4]	–	–	–	(26)	–	(26)
– Non-controlling interests	–	–	–	(18)	–	(18)
Currency translation of foreign operations						
– Exchange differences	–	–	4	(1)	493	496
– Non-controlling interests	–	–	–	–	(128)	(128)
Defined benefit plans						
– Remeasurement gains (losses) [25]	–	178	–	–	–	178
– Limit on asset recognition [25]	–	14	–	–	–	14
– Income taxes [4]	–	(18)	–	–	–	(18)
– Non-controlling interests	–	12	–	–	–	12
Other comprehensive income, net of tax	**–**	**186**	**30**	**36**	**365**	**617**
Total comprehensive income	**–**	**9,762**	**30**	**36**	**365**	**10,193**
Dividends	–	(6,909)	–	–	–	(6,909)
Equity compensation plans, net of transactions in own equity	–	(344)	–	–	–	(344)
Changes in non-controlling interests [5]	–	(8)	–	–	–	(8)
At 31 December 2016	**160**	**31,092**	**185**	**63**	**(7,589)**	**23,911**

a) The entire amount transferred to the income statement was reported in 'Other financial income (expense)'.

Genentech transaction

The Group completed the purchase of the non-controlling interests in Genentech effective 26 March 2009. Based on the International Accounting Standard 27 'Separate Financial Statements' (IAS 27) and consistent with the International Financial Reporting Standard 10 'Consolidated Financial Statements' (IFRS 10), which was adopted by the Group in 2013, this transaction was accounted for in full as an equity transaction. As a consequence, the carrying amount of the consolidated equity of the Group at that time was reduced by CHF 52.2 billion, of which CHF 8.5 billion was allocated to eliminate the book value of Genentech non-controlling interests. This accounting effect significantly impacted the Group's net equity, but has no effect on the Group's business or its dividend policy.

Share capital

At 31 December 2016 the authorised and issued share capital of Roche Holding Ltd, which is the Group's parent company, consisted of 160 million shares with a nominal value of CHF 1.00 each, as in the preceding year. The shares are bearer shares and the Group does not maintain a register of shareholders. Based on information supplied to the Group, a shareholder group with pooled voting rights owns 45.01% (2015: 45.01%) of the issued shares. On 24 March 2011 the shareholder group announced that it would continue the shareholder pooling agreement existing since 1948 with a modified shareholder composition. The shareholder group with pooled voting rights now holds 72,018,000 shares, corresponding to 45.01% of the shares issued. This figure does not include any shares without pooled voting rights that are held outside this group by individual members of the group. Ms Maja Oeri, formerly a member of the pool, now holds 8,091,900 shares representing 5.057% of the voting rights independently of the pool. This is further described in Note 30. Based on information supplied to the Group, Novartis Holding AG, Basel, owns 33.333% (participation below 33⅓%) of the issued shares (2015: 33.333%).

Non-voting equity securities *(Genussscheine)*

At 31 December 2016, 702,562,700 non-voting equity securities have been authorised and were in issue as in the preceding year. Under Swiss company law these non-voting equity securities have no nominal value, are not part of the share capital and cannot be issued against a contribution which would be shown as an asset in the balance sheet of Roche Holding Ltd. Each non-voting equity security confers the same rights as any of the shares to participate in the net profit and any remaining proceeds from liquidation following repayment of the nominal value of the shares and, if any, participation certificates. In accordance with the law and the Articles of Incorporation of Roche Holding Ltd, the Company is entitled at all times to exchange all or some of the non-voting equity securities into shares or participation certificates.

Dividends

On 1 March 2016 the shareholders approved the distribution of a dividend of CHF 8.10 per share and non-voting equity security (2015: CHF 8.00) in respect of the 2015 business year. The distribution to holders of outstanding shares and non-voting equity securities totalled CHF 6,909 million (2015: CHF 6,807 million) and has been recorded against retained earnings in 2016. The Board of Directors has proposed dividends for the 2016 business year of CHF 8.20 per share and non-voting equity security which, if approved, would result in a total distribution to shareholders of CHF 7,073 million. This is subject to approval at the Annual General Meeting on 14 March 2017.

Own equity instruments

Holdings of own equity instruments in equivalent number of non-voting equity securities

	2016 (millions)	2015 (millions)
Shares	0.1	0.1
Non-voting equity securities	10.5	10.5
Total	**10.6**	**10.6**

Own equity instruments are recorded within equity at original purchase cost. At 31 December 2016 the fair value of shares was CHF 10 million and non-voting equity securities was CHF 2.5 billion. Own equity instruments are held for the Group's potential conversion obligations that may arise from the Group's equity compensation plans (see Note 26).

Reserves

Fair value reserve. The fair value reserve represents the cumulative net change in the fair value of available-for-sale financial assets until the asset is sold, impaired or otherwise disposed of.

Hedging reserve. The hedging reserve represents the effective portion of the cumulative net change in the fair value of cash flow hedging instruments related to hedged transactions that have not yet occurred.

Translation reserve. The translation reserve represents the cumulative currency translation differences relating to the consolidation of Group companies that use functional currencies other than Swiss francs.

22. Subsidiaries

Chugai

Effective 1 October 2002 the Roche Group and Chugai completed an alliance to create a leading research-driven Japanese pharmaceutical company, which was formed by the merger of Chugai and Roche's Japanese pharmaceuticals subsidiary, Nippon Roche. The merged company is known as Chugai.

Consolidated subsidiary. Chugai is a fully consolidated subsidiary of the Group. This is based on the Group's interest in Chugai at 31 December 2016 of 61.4% (2015: 61.4%) and the Roche relationship with Chugai that is founded on the Basic Alliance, Licensing and Research Collaboration Agreements.

The common stock of Chugai is publicly traded and is listed on the Tokyo Stock Exchange under the stock code 'TSE:4519'. Chugai prepares financial statements in accordance with International Financial Reporting Standards (IFRS) that are filed on a quarterly basis with the Tokyo Stock Exchange. Due to certain consolidation entries there are minor differences between Chugai's stand-alone IFRS results and the results of Chugai as consolidated by the Roche Group in accordance with IFRS.

Chugai summarised financial information in millions of CHF

	2016	2015
Income statement		
Sales[2]	4,279	3,726
Royalties and other operating income[2]	173	243
Total revenues	**4,452**	**3,969**
Operating profit[2]	682	669
Balance sheet		
Non-current assets	2,083	1,890
Current assets	5,068	4,669
Non-current liabilities	(285)	(212)
Current liabilities	(1,079)	(1,087)
Total net assets	**5,787**	**5,260**
Cash flows		
Cash flows from operating activities	351	500
Cash flows from investing activities	(91)	(360)
Cash flows from financing activities	(303)	(226)

Dividends. The dividends distributed to third parties holding Chugai shares during 2016 totalled CHF 110 million (2015: CHF 87 million) and have been recorded against non-controlling interests (see Note 23). Dividends paid by Chugai to Roche are eliminated on consolidation as inter-company items.

Roche's relationship with Chugai. Chugai has entered into certain agreements with Roche, which are discussed below:

(1) Basic Alliance Agreement – As part of the Basic Alliance Agreement signed in December 2001, Roche and Chugai entered into certain arrangements covering the future operation and governance of Chugai. Amongst other matters these cover the following areas:
- The structuring of the alliance.
- Roche's rights as a shareholder.
- Roche's rights to nominate members of Chugai's Board of Directors.
- Certain limitations to Roche's ability to buy or sell Chugai's common stock.

Chugai issues additional shares of common stock in connection with its convertible debt and equity compensation plans, and may issue additional shares for other purposes, which affects Roche's percentage ownership interest. The Basic Alliance Agreement provides, amongst other matters, that Chugai will guarantee Roche's right to maintain its shareholding percentage in Chugai at not less than 50.1%.

(2) Licensing Agreements – Under the Japan Umbrella Rights Agreement signed in December 2001, Chugai has exclusive rights to market Roche's pharmaceutical products in Japan. Chugai also has the right of first refusal on the development and marketing in Japan of all development compounds advanced by Roche.

The Rest of the World Umbrella Rights Agreement (excluding Japan and South Korea) signed in May 2002 was revised and the Amended and Restated Rest of the World Umbrella Rights Agreement (excluding Japan, South Korea and Taiwan) was signed in August 2014. Under this Agreement Roche has the right of first refusal on the development and marketing of Chugai's development compounds in markets outside Japan, excluding South Korea and Taiwan.

Further to these agreements, Roche and Chugai have signed a series of separate agreements for certain specific products. Depending on the specific circumstances and the terms of the agreement, this may result in payments on an arm's length basis between Roche and Chugai, for any or all of the following matters:
- Upfront payments, if a right of first refusal to license a product is exercised.
- Milestone payments, dependent upon the achievement of agreed performance targets.
- Royalties on future product sales.

These specific product agreements may also cover the manufacture and supply of the respective products to meet the other party's clinical and/or commercial requirements on an arm's length basis.

(3) Research Collaboration Agreements – Roche and Chugai have entered into research collaboration agreements in the areas of small-molecule synthetic drug research and biotechnology-based drug discovery.

Foundation Medicine

On 7 April 2015 the Group acquired a controlling interest in Foundation Medicine, Inc. ('FMI') and entered into an Investor Rights Agreement, a Research and Development Collaboration Agreement and several Commercial Collaboration Agreements.

FMI is a fully consolidated subsidiary of the Group. This is based on the Group's interest in FMI at 31 December 2016 of 59.6% (2015: 60.9%) and the Roche relationship with FMI that is founded on the above agreements. The common stock of FMI is publicly traded and is listed on the Nasdaq under the stock code 'FMI'. FMI prepares financial statements in accordance with US GAAP that are filed on a quarterly basis with the SEC. Due to certain consolidation entries there are differences between FMI's stand-alone US GAAP results and the results of FMI as consolidated by the Roche Group in accordance with IFRS.

Dividends. There were no dividends distributed to third parties holding FMI shares during 2016 and 2015.

23. Non-controlling interests

Changes in equity attributable to non-controlling interests in millions of CHF

	2016	2015
At 1 January	2,321	1,972
Net income recognised in income statement		
– Chugai	186	197
– Other non-controlling interests	(29)	(4)
Total net income recognised in income statement	**157**	**193**
Available-for-sale investments	(6)	6
Cash flow hedges	18	(5)
Currency translation of foreign operations	128	(23)
Remeasurements of defined benefit plans	(12)	(5)
Other comprehensive income, net of tax	**128**	**(27)**
Total comprehensive income	**285**	**166**
Business combinations [5]	–	238
Dividends to non-controlling shareholders		
– Chugai [22]	(110)	(87)
– Other non-controlling interests	(22)	(21)
Equity compensation plans, net of transactions in own equity	9	9
Changes in non-controlling interests	8	4
Equity contribution by non-controlling interests	–	40
At 31 December	**2,491**	**2,321**
Chugai	2,170	1,978
Other non-controlling interests	321	343
Total non-controlling interests	**2,491**	**2,321**

24. Employee benefits

Employee remuneration in millions of CHF

	2016	2015
Wages and salaries	9,949	9,412
Social security costs	1,000	980
Defined contribution plans [25]	473	421
Operating expenses for defined benefit plans [25]	106	533
Equity compensation plans [26]	473	403
Termination costs [6]	231	283
Other employee benefits	837	793
Employee remuneration included in operating results	**13,069**	**12,825**
Net interest cost of defined benefit plans [25]	186	176
Total employee remuneration	**13,255**	**13,001**

Other employee benefits consist mainly of life insurance schemes and certain other insurance schemes providing medical coverage and other long-term and short-term disability benefits.

25. Pensions and other post-employment benefits

The Group's objective is to provide attractive and competitive post-employment benefits to employees, while at the same time ensuring that the various plans are appropriately financed and managing any potential impacts on the Group's long-term financial position. Most employees are covered by pension plans sponsored by Group companies. The nature of such plans varies according to legal regulations, fiscal requirements and market practice in the countries in which the employees are employed. Post-employment benefit plans are classified for IFRS as 'defined contribution plans' if the Group pays fixed contributions into a separate fund or to a third-party financial institution and will have no further legal or constructive obligation to pay further contributions. All other plans are classified as 'defined benefit plans'.

Defined contribution plans

Defined contribution plans are funded through payments by employees and by the Group to funds administered by third parties. The Group's expenses for these plans were CHF 473 million (2015: CHF 421 million). No assets or liabilities are recognised in the Group's balance sheet in respect of such plans, apart from regular prepayments and accruals of the contributions withheld from employees' wages and salaries and of the Group's contributions. The Group's major defined contribution plan is the US Roche 401(k) Savings Plan.

Defined benefit plans

Plans are usually established as trusts independent of the Group and are funded by payments from Group companies and by employees. In some cases, notably for the major defined benefit plans in Germany, the plans are unfunded and the Group pays pensions to retired employees directly from its own financial resources. Plans are usually governed by a senior governing body, such as a Board of Trustees, which is typically composed of both employee and employer representatives. Funding of these plans is determined by local regulations using independent actuarial valuations. Separate independent actuarial valuations are prepared in accordance with the requirements of IAS 19 for use in the Group's financial statements. The Group's major pension plans are located in Switzerland, the US and Germany, which in total account for 81% of the Group's defined benefit obligation (2015: 83%).

Pension plans in Switzerland. Current pension arrangements for employees in Switzerland are made through plans governed by the Swiss Federal Occupational Old Age, Survivors and Disability Pension Act ('BVG'). The Group's pension plans are administered by separate legal foundations, which are funded by regular employee and company contributions. The final benefit is contribution-based with certain minimum guarantees. Due to these minimum guarantees, the Swiss plans are treated as defined benefit plans for the purposes of these IFRS financial statements, although they have many of the characteristics of defined contribution plans. Where there is an under-funding, this may be remedied by various measures such as increasing employee and company contributions, lowering the interest rate on retirement account balances, reducing prospective benefits and a suspension of the early withdrawal facility.

In 2016 operating income of CHF 426 million was recorded for past service costs from changes to the Group's pension plans in Switzerland that were announced in June 2016. This represents the impact of the adjustment of the pension liability for plan changes. Of this amount, CHF 310 million was recorded in the Pharmaceuticals Division, CHF 77 million in the Diagnostics Division and CHF 39 million in Corporate. The past service income was recorded within general and administration. As part of the adjustments to the pension plans in Switzerland, the Group made payments of CHF 165 million to the pension funds.

Pension plans in the US. The Group's major defined benefit plans in the US have been closed to new members since 2007. New employees in the US now join the defined contribution plan. The largest of the remaining defined benefit plans are funded pension plans, including separate plans originating from the Nutley, Palo Alto and Indianapolis sites, together with smaller unfunded supplementary retirement plans. The benefits are based on the highest average annual rate of earnings during a specified period and length of employment. The plans are non-contributory for employees, with the Group making periodic payments to the plans. Where there is an under-funding, this would normally be remedied by additional company contributions. In 2016 payments made by the Group were USD 233 million (2015: USD 130 million). With the increased contribution the Group benefitted from a lower insurance fee to Pension Benefit Guarantee Corporation, a US government agency overseeing occupational pension schemes in the US.

Pension plans in Germany. The Group's major pension arrangements in Germany are governed by the Occupational Pensions Act ('BetrAVG'). These plans are unfunded and the Group pays pensions to retired employees directly from its own financial resources. These plans are non-contributory for employees. The benefits are based on final salary and length of employment. These plans have been closed to new members since 2007. They have been replaced by a new plan which is funded by regular employee and company contributions and administered through a contractual trust agreement. The final benefit is contribution-based with a minimum guarantee. Due to this minimum guarantee, this plan is treated as a defined benefit plan for the purposes of these IFRS financial statements, although it has many of the characteristics of a defined contribution plan.

Pension plans in the Rest of the World. These represent approximately 12% of the Group's defined benefit obligation (2015: 11%) and consist of a number of smaller plans in various countries. Of these the largest are the pension plans at Chugai, which are independently managed by Chugai, and the main pension plan in the United Kingdom. The Chugai plans are fully described in Chugai's own IFRS financial statements. The UK pension plan is funded by regular employee and company contributions, with benefits based on final salary and length of employment. This plan has been closed to new members since 2003 and has been replaced with a defined contribution plan. In 2016 the Group made payments of EUR 66 million to the pension funds in Ireland in relation to the restructuring of the manufacturing site at Clarecastle.

Other post-employment benefit ('OPEB') plans. These represent approximately 7% of the Group's defined benefit obligation (2015: 6%) and consist of post-retirement healthcare and life insurance schemes, mainly in the US. These plans are mainly unfunded or are contributory for employees, with the Group reimbursing retired employees directly from its own financial resources. The Group's major OPEB plans in the US have been closed to new members since 2011. Part of the costs of these plans is reimbursable under the Medicare Prescription Drug Improvement and Modernization Act of 2003. There is no statutory funding requirement for these plans. The Group is funding these plans to the extent that it is tax efficient. In 2016 there were no payments made by the Group to these plans (2015: none). At 31 December 2016 the IFRS funding status was 44% (2015: 45%), including reimbursement rights, for the funded OPEB plans in the US.

Defined benefit plans: income statement in millions of CHF

	2016			2015		
	Pension plans	Other post-employment benefit plans	Total expense	Pension plans	Other post-employment benefit plans	Total expense
Current service cost	523	14	537	504	14	518
Past service (income) cost	(415)	–	(415)	20	–	20
Settlement (gain) loss	(16)	–	(16)	(5)	–	(5)
Total operating expenses	**92**	**14**	**106**	**519**	**14**	**533**
Net interest cost of defined benefit plans	153	33	186	146	30	176
Total expense recognised in income statement	**245**	**47**	**292**	**665**	**44**	**709**

Funding status

The funding of the Group's various defined benefit plans is the responsibility of a senior governing body, such as a Board of Trustees, and the sponsoring employer, and is managed based on local statutory valuations, which follow the legislation and requirements of the respective jurisdiction in which the plan is established. Qualified independent actuaries carry out statutory actuarial valuations on a regular basis. The actuarial assumptions determining the funding status on the statutory basis are regularly assessed by the local senior governing body. The funding status is closely monitored at a corporate level. The unfunded plans are mainly those in the Group's German affiliates, where the fully reserved pension obligations are invested in the local affiliate's operations.

The IFRS funded status of the funded defined benefit plans improved to 86% (2015: 79%).

Reimbursement rights are linked to the post-employment medical plans in the US and represent the expected reimbursement of the medical expenditure provided under the Medicare Prescription Drug Improvement and Modernization Act of 2003.

Defined benefit plans: funding status in millions of CHF

	2016			2015		
	Pension plans	Other post-employment benefit plans	Total	Pension plans	Other post-employment benefit plans	Total
Funded plans						
– Fair value of plan assets	13,257	314	13,571	12,056	307	12,363
– Defined benefit obligation	(14,672)	(1,062)	(15,734)	(14,664)	(965)	(15,629)
Over (under) funding	**(1,415)**	**(748)**	**(2,163)**	**(2,608)**	**(658)**	**(3,266)**
Unfunded plans						
– Defined benefit obligation	(4,625)	(306)	(4,931)	(4,277)	(267)	(4,544)
Total funding status	**(6,040)**	**(1,054)**	**(7,094)**	**(6,885)**	**(925)**	**(7,810)**
Limit on asset recognition	–	–	–	(14)	–	(14)
Reimbursement rights	–	154	154	–	125	125
Net recognised asset (liability)	**(6,040)**	**(900)**	**(6,940)**	**(6,899)**	**(800)**	**(7,699)**
Reported in balance sheet						
– Defined benefit plan assets	584	154	738	517	125	642
– Defined benefit plan liabilities	(6,624)	(1,054)	(7,678)	(7,416)	(925)	(8,341)

Plan assets

The responsibility for the investment strategies of funded plans is with the senior governance body such as the Board of Trustees. Asset-liability studies are performed regularly for all major pension plans. These studies examine the obligations from post-retirement benefit plans, and evaluate various investment strategies with respect to key financial measures such as expected returns, expected risks, expected contributions, and expected funded status of the plan in an interdependent way. The goal of an asset-liability study is to select an appropriate asset allocation for the funds held within the plan. The investment strategy is developed to optimise expected returns, to manage risks and to contain fluctuations in the statutory funded status. Asset-liability studies include strategies to match the cash flows of the assets with the plan obligations. The Group currently does not use annuities or longevity swaps to manage longevity risk.

Plan assets are managed using internal and external asset managers. The actual performance is continually monitored by the pension fund governance bodies as well as being closely monitored at a corporate level. In these financial statements the difference between the interest income and actual return on plan assets is a remeasurement that is recorded directly to other comprehensive income. During 2016 the actual return on plan assets was a gain of CHF 986 million (2015: loss of CHF 7 million).

The recognition of pension assets is limited to the present value of any economic benefits available from refunds from the plans or reductions in future contributions to the plans.

Defined benefit plans: fair value of plan assets and reimbursement rights in millions of CHF

	2016			2015		
	Pension plans	Other post-employment benefit plans	Total	Pension plans	Other post-employment benefit plans	Total
At 1 January	12,056	432	12,488	12,110	502	12,612
Interest income on plan assets	240	18	258	239	18	257
Remeasurements on plan assets	707	55	762	(252)	(44)	(296)
Currency translation effects	(7)	9	2	(108)	(2)	(110)
Employer contributions	736	(4)	732	400	(3)	397
Employee contributions	114	9	123	109	4	113
Benefits paid – funded plans	(517)	(49)	(566)	(437)	(41)	(478)
Benefits paid – settlements	(69)	–	(69)	–	–	–
Administration costs	(3)	(2)	(5)	(5)	(2)	(7)
At 31 December	**13,257**	**468**	**13,725**	**12,056**	**432**	**12,488**

Defined benefit plans: composition of plan assets in millions of CHF

	2016	2015
Equity securities	4,621	4,294
Debt securities	5,315	4,858
Property	1,660	1,474
Cash and money market instruments	227	186
Other investments	1,748	1,551
At 31 December	**13,571**	**12,363**

Assets are invested in a variety of different classes in order to maintain a balance between risk and return as follows:
- Equity and debt securities which mainly have quoted market prices (Level 1 fair value hierarchy).
- Property which is mainly in private and commercial property funds which mainly have other observable inputs (Level 2 fair value hierarchy).
- Cash and money market instruments which are mainly invested with financial institutions with a credit rating no lower than A.
- Other investments which mainly consist of alternatives, mortgages, commodities and insurance contracts. These are used for risk management purposes and mainly have other observable inputs (Level 2 fair value hierarchy) and unobservable inputs (Level 3 fair value hierarchy).

Included within the fair value of plan assets are the Group's shares and non-voting securities with a fair value of CHF 120 million (2015: CHF 171 million) and debt instruments issued by the Group with a fair value of CHF 18 million (2015: CHF 19 million).

Defined benefit obligation

The defined benefit obligation is calculated using the projected unit credit method. This reflects service rendered by employees to the dates of valuation and incorporates actuarial assumptions primarily regarding discount rates used in determining the present value of benefits, projected rates of remuneration growth and mortality rates. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds or government bonds in countries where there is not a deep market in corporate bonds. The corporate or government bonds are denominated in the currency in which the benefits will be paid, and have maturity terms approximating to the terms of the related pension obligation.

The Group's final salary-based defined benefit pension plans in the US, Germany and the United Kingdom have been closed to new participants. Active employees that had been members of these pension plans at the time these were closed to new participants continue to accrue benefits in the final salary-based defined benefit pension plans. New employees in the US and UK now join the Group's defined contribution plans, while new employees in Germany join the contribution-based plan with a minimum guarantee. As a result, the proportion of the defined benefit obligation which relates to these closed plans is expected to decrease in the future. The defined benefit pension plans in Switzerland, where the final benefit is contribution-based with a minimum guarantee, remain open to new employees.

Defined benefit plans: defined benefit obligation in millions of CHF

	2016			2015		
	Pension plans	Other post-employment benefit plans	Total	Pension plans	Other post-employment benefit plans	Total
At 1 January	18,941	1,232	20,173	19,643	1,272	20,915
Current service cost	523	14	537	504	14	518
Interest cost	393	51	444	385	48	433
Remeasurements:						
– demographic assumptions	(334)	–	(334)	9	(10)	(1)
– financial assumptions	749	104	853	(756)	(64)	(820)
– experience adjustments	65	(14)	51	140	32	172
Currency translation effects	(9)	41	32	(620)	(5)	(625)
Other movements[19]	–	–	–	72	–	72
Employee contributions	114	9	123	109	4	113
Benefits paid – funded plans	(517)	(49)	(566)	(437)	(41)	(478)
Benefits paid – unfunded plans	(128)	(20)	(148)	(123)	(18)	(141)
Benefits paid – settlements	(69)	–	(69)	–	–	–
Past service (income) cost	(415)	–	(415)	20	–	20
Settlement (gain) loss	(16)	–	(16)	(5)	–	(5)
At 31 December	**19,297**	**1,368**	**20,665**	**18,941**	**1,232**	**20,173**
Composition of plan						
Active members	9,297	369	9,666	9,328	336	9,664
Deferred vested members	1,664	15	1,679	1,549	48	1,597
Retired members	8,336	984	9,320	8,064	848	8,912
At 31 December	**19,297**	**1,368**	**20,665**	**18,941**	**1,232**	**20,173**
Plans by geography						
Switzerland	8,342	–	8,342	8,806	–	8,806
United States	4,280	1,329	5,609	4,060	1,188	5,248
Germany	4,080	–	4,080	3,801	–	3,801
Rest of the World	2,595	39	2,634	2,274	44	2,318
At 31 December	**19,297**	**1,368**	**20,665**	**18,941**	**1,232**	**20,173**
Duration in years	16.0	13.3	15.8	15.4	13.2	15.2

Actuarial assumptions

The actuarial assumptions used in these financial statements are based on the requirements set out in IAS 19 'Employee Benefits'. They are unbiased and mutually compatible estimates of variables that determine the ultimate cost of providing post-employment benefits. They are set on an annual basis by local management, based on advice from actuaries, and are subject to approval by corporate management and the Group's actuaries. Actuarial assumptions consist of demographic assumptions on matters such as mortality and employee turnover, and financial assumptions on matters such as interest rates, salary and benefit levels, inflation rates and costs of medical benefits. The actuarial assumptions vary based upon local economic and social conditions. The actuarial assumptions used in the various statutory valuations may differ from these based on local legal and regulatory requirements.

Demographic assumptions. The most significant demographic assumptions relate to mortality rates. The Group's actuaries use mortality tables which take into account historic patterns and expected changes, such as further increases in longevity. Rates of employee turnover, disability and early retirement are based on historical behaviour. The average life expectancy assumed now for an individual at the age of 65 is as follows:

Defined benefit plans: average life expectancy at the age of 65 for major schemes in years

		Male		Female	
Country	Mortality table	2016	2015	2016	2015
Switzerland	BVG 2015 projected with CMI model [1]	21.2	21.5	23.0	24.0
United States	RP-2014 projected with MP-2014	22.2	22.2	23.8	23.7
Germany	Heubeck tables 2005G	19.1	18.9	23.2	22.9

1) For 2015 BVG 2010 generational tables were used.

At 31 December 2016, the mortality assumptions used for the pension plans in Switzerland were based on BVG 2015 applying the Continuous Mortality Investigation ('CMI') model as the Group believes it better reflects the mortality improvement factors. A long-term rate of 1.25% was used for longevity improvements. The defined benefit obligation measured with this mortality assumption is approximately CHF 325 million lower compared to the respective amount measured using BVG 2015 generational tables.

Financial assumptions. These are based on market expectations for the period over which the obligations are to be settled. The assumptions used in the actuarial valuations are shown below.

Defined benefit plans: financial actuarial assumptions

	2016		2015	
	Weighted average	Range	Weighted average	Range
Discount rates	1.88%	0.10%–5.80%	2.28%	0.80%–6.50%
Expected rates of salary increases	2.56%	0.00%–4.50%	2.76%	0.00%–5.00%
Expected rates of pension increases	0.59%	0.00%–3.00%	0.59%	0.00%–2.10%
Expected inflation rates	1.92%	0.00%–3.50%	1.12%	0.00%–4.00%
Immediate medical cost trend rate	6.78%	5.90%–6.80%	6.98%	6.10%–7.00%
Ultimate medical cost trend rate (in 2029)	4.50%	4.50%	4.50%	4.50%

Discount rates are determined with reference to interest rates on high-quality corporate bonds or government bonds in countries where there is not a deep market in corporate bonds. Expected rates of salary increases are based on expected inflation rates with an adjustment to reflect the Group's latest expectation of long-term real salary increases. Expected rates of pension increases are generally linked to the expected inflation rate or the funding status of the plan. Expected inflation rates are derived by looking at the level of inflation implied by the financial markets in conjunction with the economists' price inflation forecasts, historic price inflation as well as other economic variables and circumstances. Medical cost trend rates take into account the benefits set out in the plan terms and expected future changes in medical costs. Since the Group's major post-employment medical plans are for US employees, these rates are driven by developments in the US.

Sensitivity analysis. The measurement of the net defined benefit obligation is particularly sensitive to changes in the discount rate, inflation rate, expected mortality and medical cost trend rate assumptions. The following table summarises the impact of a change in those assumptions on the present value of the defined benefit obligation.

Defined benefit plans: sensitivity of defined benefit obligation to actuarial assumptions in millions of CHF

	2016	2015
1 year increase in life expectancy	723	606
Discount rates		
0.25% increase	(825)	(733)
0.25% decrease	878	781
Expected inflation rates		
0.25% increase	374	256
0.25% decrease	(335)	(240)
Immediate medical cost trend rate		
1.00% increase	177	153
1.00% decrease	(146)	(120)

Each sensitivity analysis considers the change in one assumption at a time leaving the other assumptions unchanged. This approach shows the isolated effect of changing one individual assumption but does not take into account that some assumptions are related. The method used to carry out the sensitivity analysis is the same as in the prior year.

Cash flows

The Group incurred cash flows from its defined benefit plans as shown in the table below.

Defined benefit plans: cash flows in millions of CHF

	2016	2015
Employer contributions, net of reimbursements – funded plans	(732)	(397)
Benefits paid – unfunded plans	(148)	(141)
Total cash inflow (outflow)	**(880)**	**(538)**

Based on the most recent actuarial valuations, the Group expects that employer contributions for funded plans in 2017 will be approximately CHF 408 million, which includes an estimated CHF 111 million of additional contributions, mostly related to the US defined benefit plans. Benefits paid for unfunded plans in 2017 are estimated to be approximately CHF 160 million, which mostly relate to the German defined benefit plans.

26. Equity compensation plans

The Group operates several equity compensation plans, including separate plans at Chugai and Foundation Medicine. IFRS 2 'Share-based Payment' requires that the fair value of all equity compensation plan awards granted to employees be estimated at grant date and recorded as an expense over the vesting period.

Expenses for equity compensation plans in millions of CHF

	2016	2015
Cost of sales	87	79
Marketing and distribution	108	94
Research and development	168	140
General and administration	110	90
Total operating expenses	**473**	**403**
Equity compensation plans		
Roche Stock-settled Stock Appreciation Rights	198	196
Roche Restricted Stock Unit Plan	209	154
Roche Performance Share Plan	13	15
Roche Connect	20	16
Roche Option Plan	3	4
Bonus Stock Awards	6	7
Chugai and Foundation Medicine plans	24	11
Total operating expenses	**473**	**403**
of which		
– Equity-settled	473	403
– Cash-settled	–	–

Cash inflow (outflow) from equity compensation plans in millions of CHF

	2016	2015
Roche Option Plan exercises	16	41
Chugai and Foundation Medicine plans' exercises	7	14
Roche Connect costs	(20)	(16)
Transactions in own equity	(560)	(208)
Total cash inflow (outflow) from equity-settled equity compensation plans, net of transactions in own equity	**(557)**	**(169)**

The net cash outflow from transactions in own equity mainly arises from sales and purchases of equity instruments which are held for the Group's potential conversion obligations that may arise from the Group's equity compensation plans (see Note 21).

Equity compensation plans

Roche Stock-settled Stock Appreciation Rights. The Group issues Stock-settled Stock Appreciation Rights (S-SARs) to certain directors, management and employees selected at the discretion of the Group. The S-SARs give employees the right to receive non-voting equity securities reflecting the value of any appreciation in the market price of the non-voting equity securities between the grant date and the exercise date. Under the Roche S-SAR Plan 180 million S-SARs will be available for issuance over a ten-year period. The rights, which are non-tradable equity-settled awards, have a seven-year duration and vest on a phased basis over three years.

Roche S-SARs – movement in number of rights outstanding

	2016		2015	
	Number of rights (thousands)	Weighted average exercise price (CHF)	Number of rights (thousands)	Weighted average exercise price (CHF)
Outstanding at 1 January	35,814	206.02	34,909	187.72
Granted	11,356	250.82	8,471	256.75
Forfeited	(1,122)	253.57	(995)	244.22
Exercised	(3,829)	169.02	(6,531)	168.26
Expired	(41)	160.35	(40)	194.50
Outstanding at 31 December	**42,178**	**220.22**	**35,814**	**206.02**
– of which exercisable	24,074	194.87	20,887	173.68

Roche S-SARs – terms of rights outstanding at 31 December 2016

	Rights outstanding			Rights exercisable	
Year of grant	Number outstanding (thousands)	Weighted average years remaining contractual life	Weighted average exercise price (CHF)	Number exercisable (thousands)	Weighted average exercise price (CHF)
2010	1,870	0.74	147.72	1,870	147.72
2011	3,260	1.18	140.19	3,260	140.19
2012	7,084	2.26	157.94	7,084	157.94
2013	5,507	3.26	214.79	5,507	214.79
2014	5,878	4.26	263.47	3,787	263.48
2015	7,588	5.27	256.75	2,514	256.77
2016	10,991	6.26	250.81	52	251.50
Total	**42,178**	**4.10**	**220.22**	**24,074**	**194.87**

Roche Restricted Stock Unit Plan. The Group issues Restricted Stock Units (RSUs) awards to certain directors, management and employees selected at the discretion of the Group. The RSUs, which are non-tradable, represent the right to receive non-voting equity securities which vest only after a three-year period, subject to performance conditions, if any. There are currently no performance conditions on outstanding RSUs at 31 December 2016. Under the Roche RSU Plan 20 million non-voting equity securities will be available for issuance over a ten-year period. The Roche RSU Plan also includes a value adjustment which will be an amount equivalent to the sum of shareholder distributions made by the Group during the vesting period attributable to the number of non-voting equity securities for which an individual award has been granted.

Roche RSUs – movement in number of awards outstanding

	2016 Number of awards (thousands)	2015 Number of awards (thousands)
Outstanding at 1 January	1,952	1,392
Granted	1,308	778
Forfeited	(127)	(136)
Transferred to participants	(790)	(82)
Outstanding at 31 December	**2,343**	**1,952**
– of which vested and transferable	–	–

Roche Performance Share Plan. The Group offers future share and non-voting equity security awards (or, at the discretion of the Board of Directors, their cash equivalent) to certain directors and key senior managers. These are non-tradable equity-settled awards. The programme currently operates in annual three-year cycles. The Roche Performance Share Plan (PSP) includes a value adjustment which will be an amount equivalent to the sum of shareholder distributions made by the Group during the vesting period attributable to the number of shares or non-voting equity securities for which an individual award has been granted. The amount of shares or non-voting equity securities allocated will depend upon the individual's salary level, the achievement of performance targets linked to the Group's Total Shareholder Return (shares and non-voting equity securities combined) relative to the Group's peers during the three-year period from the date of the grant, and the discretion of the Board of Directors. Each award will result in between zero and two shares or non-voting equity securities (before value adjustment), depending upon the achievement of the performance targets.

Roche Performance Share Plan – terms of outstanding awards at 31 December 2016

	2014–2016	2015–2017	2016–2018
Number of awards outstanding (thousands)	69	69	41
Vesting period	3 years	3 years	3 years
Allocated to recipients in	Feb. 2017	Feb. 2018	Feb. 2019
Fair value per unit at grant (CHF)	228.42	217.45	264.36
Total fair value at grant (CHF millions)	**18**	**17**	**11**

Roche Connect. This programme enables all employees worldwide, except for those in the US and certain other countries, to make regular deductions from their salaries to purchase non-voting equity securities. It is administered by independent third parties. The Group contributes to the programme, which allows the employees to purchase non-voting equity securities at a discount (usually 20%). The administrator purchases the necessary non-voting equity securities directly from the market. At 31 December 2016 the administrator held 2.6 million non-voting equity securities (2015: 2.3 million). In 2016 the cost of the plan was CHF 20 million (2015: CHF 16 million).

Roche Option Plan. This programme is used in countries where S-SARs are not used. Awards under this plan give employees the right to purchase non-voting equity securities at an exercise price specified at the grant date. The options, which are non-tradable equity-settled awards, have a seven-year duration and vest on a phased basis over three years.

Roche Option Plan – movement in number of options outstanding

	2016		2015	
	Number of options (thousands)	Weighted average exercise price (CHF)	Number of options (thousands)	Weighted average exercise price (CHF)
Outstanding at 1 January	794	203.49	895	184.62
Granted	160	250.44	185	256.61
Forfeited	(20)	250.14	(39)	236.96
Exercised	(100)	164.90	(244)	169.43
Expired	–	–	(3)	195.80
Outstanding at 31 December	**834**	**216.02**	**794**	**203.49**
– of which exercisable	537	194.88	486	173.87

Roche Option Plan – terms of options outstanding at 31 December 2016

Year of grant	Number outstanding (thousands)	Weighted average years remaining contractual life	Options outstanding Weighted average exercise price (CHF)	Number exercisable (thousands)	Options exercisable Weighted average exercise price (CHF)
2010	25	0.39	164.55	25	164.55
2011	89	1.17	140.10	89	140.10
2012	155	2.25	157.59	155	157.59
2013	132	3.25	214.00	132	214.00
2014	120	4.25	263.21	80	263.21
2015	156	5.26	256.71	55	256.68
2016	157	6.26	250.43	1	251.50
Total	**834**	**3.84**	**216.02**	**537**	**194.88**

The weighted average share price of Roche non-voting equity securities during the year was CHF 244.39 (2015: CHF 266.58).

Bonus Stock Awards. The Chairman of the Board of Directors and the Chief Executive Officer will be granted Bonus Stock Awards in lieu of their cash-settled bonus for the financial year 2016. These will be issued by the end of April 2017. The number of awards and fair value per award will be calculated at the grant date.

Fair value measurement

The inputs used in the measurement of the fair values at grant date of the equity compensation plans were as follows:

Fair value measurement in 2016

	Roche Stock-settled Stock Appreciation Rights	Roche Restricted Stock Unit Plan	Roche Performance Share Plan	Roche Option Plan
Vesting period	Progressively over 3 years	Cliff vesting after 3 years	Cliff vesting after 3 years	Progressively over 3 years
Contractual life	7 years	n/a	n/a	7 years
Number granted during year (thousands)	11,356	1,308	41	160
Weighted average fair value (CHF)	20	251	264	20
Model used	Binomial	Market price[a)]	Monte Carlo[b)]	Binomial
Inputs to option pricing model				
– Share price at grant date (CHF)	251	251	277	251
– Exercise price (CHF)	251	–	–	251
– Expected volatility[c)]	19.2%	n/a	n/a	19.2%
– Expected dividend yield	4.9%	n/a	n/a	4.9%
– Early exercise factor[d)]	1.33	n/a	n/a	1.33
– Expected exit rate	7.7%	n/a	n/a	7.7%

a) The fair value of the Roche RSUs is equivalent to the share price on the date of grant.
b) The input parameters were the covariance matrix between Roche and the other individual companies of the peer group based on a three-year history and a risk-free rate of minus 1.05%. The valuation takes into account the defined rank and performance structure which determines the pay-out of the plan.
c) Volatility was determined primarily by reference to historically observed prices of the underlying equity. Risk-free interest rates are derived from zero coupon swap rates at the grant date taken from Datastream.
d) The early exercise factor describes the ratio between the expected market price at the exercise date and the exercise price at which early exercises can be expected, based on historically observed behaviour.

27. Earnings per share and non-voting equity security

Basic earnings per share and non-voting equity security

	2016	2015
Net income attributable to Roche shareholders (CHF millions)	**9,576**	**8,863**
Number of shares (millions) [21]	160	160
Number of non-voting equity securities (millions) [21]	703	703
Weighted average number of own shares and non-voting equity securities held (millions)	(11)	(12)
Weighted average number of shares and non-voting equity securities in issue (millions)	**852**	**851**
Basic earnings per share and non-voting equity security (CHF)	**11.24**	**10.42**

Diluted earnings per share and non-voting equity security

	2016	2015
Net income attributable to Roche shareholders (CHF millions)	9,576	8,863
Increase in non-controlling interests' share of Group net income, assuming all outstanding Chugai stock options exercised (CHF millions)	(1)	(1)
Net income used to calculate diluted earnings per share (CHF millions)	**9,575**	**8,862**
Weighted average number of shares and non-voting equity securities in issue (millions)	852	851
Adjustment for assumed exercise of equity compensation plans, where dilutive (millions)	8	11
Weighted average number of shares and non-voting equity securities in issue used to calculate diluted earnings per share (millions)	**860**	**862**
Diluted earnings per share and non-voting equity security (CHF)	**11.13**	**10.28**

28. Statement of cash flows

Cash flows from operating activities

Cash flows from operating activities arise from the Group's primary activities in the Pharmaceuticals and Diagnostics businesses. These are calculated by the indirect method by adjusting the Group's operating profit for any operating income and expenses that are not cash flows (for example depreciation, amortisation and impairment) in order to derive the cash generated from operations. This and other operating cash flows are shown in the statement of cash flows. Operating cash flows also include income taxes paid on all activities.

Cash generated from operations in millions of CHF

	2016	2015
Net income	9,733	9,056
Add back non-operating (income) expense		
– Financing costs [3]	1,099	1,574
– Other financial income (expense) [3]	(37)	260
– Income taxes [4]	3,274	2,931
Operating profit	**14,069**	**13,821**
Depreciation of property, plant and equipment [7]	2,158	1,968
Amortisation of intangible assets [9]	1,783	1,672
Impairment of goodwill [8]	95	–
Impairment of intangible assets [9]	1,413	69
Impairment (reversal) of property, plant and equipment [7]	291	191
Operating (income) expense for defined benefit plans [25]	106	533
Operating expense for equity-settled equity compensation plans [26]	473	403
Net (income) expense for provisions [19]	120	978
Bad debt (reversal) expense	10	38
Inventory write-downs	772	480
Inventory fair value adjustment	167	552
Net (gain) loss on disposal of products	(179)	(70)
Other adjustments	(53)	16
Cash generated from operations	**21,225**	**20,651**

Cash flows from investing activities

Cash flows from investing activities are principally those arising from the Group's investments in property, plant and equipment and intangible assets, and from the acquisition and divestment of subsidiaries, associates and businesses. Cash flows connected with the Group's portfolio of marketable securities and other investments are also included, as are any interest and dividend payments received in respect of these securities and investments. These cash flows indicate the Group's net reinvestment in its operating assets and the cash flow effects of business combinations and divestments, as well as the cash generated by the Group's other investments.

Interest and dividends received in millions of CHF

	2016	2015
Interest received	22	26
Dividends received	2	2
Total	**24**	**28**

Cash flows from financing activities

Cash flows from financing activities are primarily the proceeds from the issue and repayment of the Group's equity and debt instruments. They also include interest payments and dividend payments on these instruments. Cash flows from short-term financing, including finance leases, are also included. These cash flows indicate the Group's transactions with the providers of its equity and debt financing. Cash flows from short-term borrowings are shown as a net movement, as these consist of a large number of transactions with short maturity.

Dividends paid in millions of CHF

	2016	2015
Dividends to Roche Group shareholders	(6,909)	(6,807)
Dividends to non-controlling shareholders – Chugai	(110)	(87)
Dividends to non-controlling shareholders – Other	(22)	(21)
Increase (decrease) in dividends payable	–	(41)
Dividend withholding tax	1	2
Total	**(7,040)**	**(6,954)**

Significant non-cash transactions

In 2016 there were no significant non-cash transactions, except for contingent consideration arrangements arising from business combinations (see Notes 5 and 29).

In 2015 there were no significant non-cash transactions, except for contingent consideration arrangements arising from business combinations (see Notes 5 and 29) and the Genentech property purchase option exercise (see Note 7).

29. Risk management

Group risk management

Risk management is a fundamental element of the Group's business practice on all levels and encompasses different types of risks. At a Group level risk management is an integral part of the business planning and controlling processes. Material risks are monitored and regularly discussed with the Corporate Executive Committee and the Audit Committee of the Board of Directors.

Financial risk management

The Group is exposed to various financial risks arising from its underlying operations and corporate finance activities. The Group's financial risk exposures are predominantly related to changes in foreign exchange rates, interest rates and equity prices as well as the creditworthiness and the solvency of the Group's counterparties.

Financial risk management within the Group is governed by policies reviewed by the boards of directors of Roche, Chugai and Foundation Medicine as appropriate to their areas of statutory responsibility. These policies cover credit risk, liquidity risk and market risk. The policies provide guidance on risk limits, type of authorised financial instruments and monitoring procedures. As a general principle, the policies prohibit the use of derivative financial instruments for speculative trading purposes. Policy implementation and day-to-day risk management are carried out by the relevant treasury functions and regular reporting on these risks is performed by the relevant accounting and controlling functions within Roche, Chugai and Foundation Medicine.

Credit risk

Credit risk arises from the possibility that counterparties to transactions may default on their obligations, causing financial losses for the Group. The objective of managing counterparty credit risk is to prevent losses of liquid funds deposited with or invested in such counterparties. The maximum exposure to credit risk resulting from financial activities, without considering netting agreements and without taking account of any collateral held or other credit enhancements, is equal to the carrying value of the Group's financial assets.

Accounts receivable. At 31 December 2016 the Group has trade receivables of CHF 9.4 billion (2015: CHF 9.0 billion). These are subject to a policy of active credit risk management which focuses on the assessment of country risk, credit availability, ongoing credit evaluation and account monitoring procedures. The objective of trade receivables management is to maximise the collection of unpaid amounts.

At 31 December 2016 the Group's combined trade receivables balance with three US national wholesale distributors, AmerisourceBergen Corp., McKesson Corp. and Cardinal Health, Inc., was equivalent to CHF 1.7 billion representing 18% of the Group's consolidated trade receivables (2015: CHF 1.5 billion representing 17%). There is no other significant concentration of counterparty credit risk due to the Group's large number of customers and their wide geographical spread. Risk limits and exposures are continuously monitored by country and by the nature of counterparties. The Group obtains credit insurance and similar enhancements when appropriate to protect the collection of trade receivables. At 31 December 2016 no collateral was held for trade receivables (2015: none).

Since 2010 there have been financial difficulties in Southern European countries, notably Spain, Italy, Greece and Portugal. The Group is a leading supplier to the healthcare sectors in these countries and has trade receivables of CHF 0.8 billion (2015: CHF 1.0 billion) with the public and private customers in these countries. The Group uses different measures to improve collections in these countries, including intense communication with customers, factoring, negotiations of payments plans, charging of interest for late payments, and legal action.

The nature and geographic location of counterparties to accounts receivable that are not overdue or impaired are shown in the table below. These include the balances with US national wholesalers and Southern Europe public customers described above.

Accounts receivable (not overdue): nature and geographical location of counterparties in millions of CHF

	2016				2015			
Regions	Total	Public	Whole-salers/ distributors	Private	Total	Public	Whole-salers/ distributors	Private
Switzerland	32	13	7	12	37	14	10	13
Europe	1,451	515	315	621	1,670	616	340	714
North America	2,359	55	1,713	591	2,065	50	1,394	621
Latin America	588	63	176	349	475	75	159	241
Japan	1,216	1	1,207	8	1,128	–	1,124	4
Asia, Australia and Oceania	1,101	46	521	534	1,044	40	524	480
Rest of the World	811	137	302	372	766	138	324	304
Total	**7,558**	**830**	**4,241**	**2,487**	**7,185**	**933**	**3,875**	**2,377**

The ageing of accounts receivable that were not impaired is shown in the table below.

Ageing of accounts receivable that are not impaired in millions of CHF

	2016	2015
Neither overdue nor impaired	7,720	7,185
Overdue under 1 month	330	374
Overdue 1–3 months	234	302
Overdue 3–6 months	263	269
Overdue 6–12 months	213	199
Overdue more than 1 year	–	–
Total accounts receivable	**8,760**	**8,329**

Cash and marketable securities. At 31 December 2016 the Group has cash and marketable securities of CHF 9.0 billion (2015: CHF 9.2 billion). These are subject to a policy of restricting exposures to high-quality counterparties and setting defined limits for individual counterparties. These limits and counterparty credit ratings are reviewed regularly. Investments in marketable securities are entered into on the basis of guidelines with regard to liquidity, quality and maximum amount. As a general rule, the Group invests only in high-quality securities with adequate liquidity. Cash and short-term time deposits are subject to rules which limit the Group's exposure to individual financial institutions.

Rating analysis of cash and fixed income marketable securities (market values)

	2016		2015	
	(CHF m)	(% of total)	(CHF m)	(% of total)
AAA-range	966	11	1,512	17
AA-range	1,741	19	1,768	19
A-range	5,686	63	5,364	59
BBB-range	381	4	226	2
Below BBB-range	112	1	50	1
Unrated	152	2	146	2
Total	**9,038**	**100**	**9,066**	**100**

Master netting agreements. The Group enters into derivative transactions and collateral agreements under International Swaps and Derivatives Association (ISDA) master netting agreements with the respective counterparties in order to mitigate counterparty risk. Under such agreements the amounts owed by each counterparty on a single day in respect of all transactions outstanding in the same currency are aggregated into a single net amount that is payable by one party to the other. The ISDA agreements do not meet the criteria for offsetting in the balance sheet as the Group does not have a currently enforceable right to offset recognised amounts, because the right to offset is only enforceable on the occurrence of future events, such as a default or other credit events.

Contract terms. At 31 December 2016 there are no significant financial assets whose terms have been renegotiated (2015: none).

Impairment losses. During 2016 total impairment losses for available-for-sale financial assets amounted to CHF 10 million (2015: CHF 10 million).

Liquidity risk

Liquidity risk arises through a surplus of financial obligations over available financial assets due at any point in time. The Group's approach to liquidity risk is to maintain sufficient readily available reserves in order to meet its liquidity requirements at any point in time. Roche and Chugai enjoy strong credit quality and are rated by at least one major credit rating agency. The ratings will permit efficient access to the international capital markets in the event of major financing requirements. At 31 December 2016 the Group has unused committed credit lines with various financial institutions totalling CHF 8.0 billion (2015: CHF 7.7 billion), of which CHF 7.7 billion serve as a back-stop line for the commercial paper program.

The remaining undiscounted cash flow contractual maturities of financial liabilities, including estimated interest payments, are shown in the table below.

Contractual maturities of financial liabilities in millions of CHF

	Carrying value	Total	Less than 1 year	1–2 years	2–5 years	Over 5 years
Year ended 31 December 2016						
Debt [20]						
– Bonds and notes	19,644	25,197	3,280	2,189	6,768	12,960
– Other debt	2,711	2,711	2,706	1	4	–
Contingent consideration [19]	1,089	1,194	339	186	455	214
Accounts payable [16]	3,375	3,375	3,375	–	–	–
Derivative financial instruments [18]	447	447	210	10	225	2
Total financial liabilities	**27,266**	**32,924**	**9,910**	**2,386**	**7,452**	**13,176**
Year ended 31 December 2015						
Debt [20]						
– Bonds and notes	20,007	25,814	3,625	3,222	6,443	12,524
– Other debt	3,244	3,244	3,238	1	3	2
Contingent consideration [19]	1,492	1,682	319	408	697	258
Accounts payable [16]	3,207	3,207	3,207	–	–	–
Derivative financial instruments [18]	639	639	455	8	7	169
Total financial liabilities	**28,589**	**34,586**	**10,844**	**3,639**	**7,150**	**12,953**

Take-or-pay commitments. The Group has entered into contract manufacturing agreements with various companies to further develop manufacturing capacity and flexibility. There are future minimum take-or-pay commitments within some of these agreements with a total potential commitment from the Group of CHF 1.4 billion at 31 December 2016 (2015: CHF 1.0 billion). This is mainly related to two contract manufacturing agreements in the Pharmaceuticals Division that are in effect until 2020 and 2024, respectively.

Market risk

Market risk arises from changing market prices, mainly foreign exchange rates and interest rates, of the Group's financial assets or financial liabilities which affect the Group's financial result and equity.

Value-at-Risk. The Group uses Value-at-Risk (VaR) to measure the impact of market risk on its financial instruments. VaR indicates the value range within which a given financial instrument will fluctuate with a pre-set probability as a result of movements in market prices. VaR is calculated using a historical simulation approach and for each scenario, all financial instruments are fully valued and the total change in value and earnings is determined. VaR calculations are based on a 95% confidence level and a holding period of 20 trading days over the past ten years. This holding period reflects the time required to change the corresponding risk exposure, should this be deemed appropriate.

Actual future gains and losses associated with our treasury activities may differ materially from the VaR analyses due to the inherent limitations associated with predicting the timing and amount of changes to interest rates, foreign exchange rates and equity investment prices, particularly in periods of high market volatilities. Furthermore, VaR does not include the effect of changes in credit spreads.

Market risk of financial instruments in millions of CHF

	2016	2015
VaR – Interest rate component	310	257
VaR – Foreign exchange component	38	35
VaR – Other price component	38	41
Diversification	(59)	(47)
VaR – Total market risk	**327**	**286**

The interest rate component increased mainly due to a gradual increase in long-term interest rates in major economies. The foreign exchange component remained largely stable. The other price component arises mainly from movements in equity security prices and remained largely stable.

Foreign exchange risk

The Group uses the Swiss franc as its reporting currency and as a result is exposed to movements in foreign currencies, mainly the US dollar, Japanese yen and euro. The objective of the Group's foreign exchange risk management activities is to preserve the economic value of its current and future assets and to minimise the volatility of the Group's financial result. The primary focus of the Group's foreign exchange risk management activities is on hedging transaction exposures arising through foreign currency flows or monetary positions held in foreign currencies. The Group uses forward contracts, foreign exchange options and cross-currency swaps to hedge transaction exposures. Application of these instruments intends to continuously lock in favourable developments of foreign exchange rates, thereby reducing the exposure to potential future movements in such rates.

Interest rate risk

The Group mainly raises debt on a fixed rate basis for bonds and notes. The Group is exposed to movements in interest rates, mainly for its US dollar, Swiss franc and euro floating rate financial instruments. The primary objective of the Group's interest rate management is to protect the net interest result. The Group may use forward contracts, options and swaps to hedge its interest rate exposures. Depending on the interest rate environment of major currencies, the Group will use these instruments to generate an appropriate mix of fixed and floating rate exposures.

Other price risk

Other price risk arises mainly from movements in the prices of equity securities. The Group manages the price risk through placing limits on individual and total equity investments. These limits are defined both as a percentage of total liquid funds and as an absolute number for individual equity investments.

Capital management

The Group defines the capital that it manages as the Group's total capitalisation, being the sum of debt plus equity, including non-controlling interests. The Group's objectives when managing capital are:

- To safeguard the Group's ability to continue as a going concern, so that it can continue to provide benefits for patients and returns to investors.
- To provide an adequate return to investors based on the level of risk undertaken.
- To have available the necessary financial resources to allow the Group to invest in areas that may deliver future benefits for patients and returns to investors.
- To maintain sufficient financial resources to mitigate against risks and unforeseen events.

The capitalisation is reported to senior management as part of the Group's regular internal management reporting and is shown in the table below.

Capital in millions of CHF

	2016	2015	2014
Capital and reserves attributable to Roche shareholders [21]	23,911	20,979	19,586
Equity attributable to non-controlling interests [23]	2,491	2,321	1,972
Total equity	**26,402**	**23,300**	**21,558**
Total debt [20]	**22,355**	**23,251**	**25,714**
Capitalisation	**48,757**	**46,551**	**47,272**

The Group's net equity was significantly impacted by the 2009 Genentech transaction (see Note 21).

The Group is not subject to regulatory capital adequacy requirements as known in the financial services industry. The Group has majority shareholdings in Chugai and Foundation Medicine (see Note 22). Chugai and Foundation Medicine are public companies and their objectives, policies and processes for managing their own capital are determined by local management.

Financial instrument accounting classifications and fair values

The fair values of financial assets and liabilities, together with the carrying value shown in the consolidated balance sheet are as follows:

Carrying value and fair value of financial instruments in millions of CHF

	Available-for-sale	Fair value – hedging instruments	Fair value – designated	Loans and receivables	Other financial liabilities	Total carrying value	Fair value
Year ended 31 December 2016							
Other non-current assets [14]							
– Available-for-sale investments	528	–	–	–	–	528	528
– Other financial non-current assets	–	–	–	124	–	124	124
Accounts receivable [11]	–	–	–	8,760	–	8,760	8,760
Marketable securities [12]	4,944	–	–	–	–	4,944	4,944
Cash and cash equivalents [13]	–	–	–	4,163	–	4,163	4,163
Other current assets [15]							
– Derivative financial instruments	–	185	–	–	–	185	185
– Other financial current assets	–	–	–	1,164	–	1,164	1,164
Total financial assets	**5,472**	**185**	**–**	**14,211**	**–**	**19,868**	**19,868**
Debt [20]							
– Bonds and notes	–	–	–	–	(19,644)	(19,644)	(20,848)
– Other debt	–	–	–	–	(2,711)	(2,711)	(2,711)
Contingent consideration [19]	–	–	(1,089)	–	–	(1,089)	(1,089)
Accounts payable [16]	–	–	–	–	(3,375)	(3,375)	(3,375)
Derivative financial instruments [18]	–	(447)	–	–	–	(447)	(447)
Total financial liabilities	**–**	**(447)**	**(1,089)**	**–**	**(25,730)**	**(27,266)**	**(28,470)**
Year ended 31 December 2015							
Other non-current assets [14]							
– Available-for-sale investments	309	–	–	–	–	309	309
– Other financial non-current assets	–	–	–	105	–	105	105
Accounts receivable [11]	–	–	–	8,329	–	8,329	8,329
Marketable securities [12]	5,440	–	–	–	–	5,440	5,440
Cash and cash equivalents [13]	–	–	–	3,731	–	3,731	3,731
Other current assets [15]							
– Derivative financial instruments	–	169	–	–	–	169	169
– Other financial current assets	–	–	–	1,359	–	1,359	1,359
Total financial assets	**5,749**	**169**	**–**	**13,524**	**–**	**19,442**	**19,442**
Debt [20]							
– Bonds and notes	–	–	–	–	(20,007)	(20,007)	(21,516)
– Other debt	–	–	–	–	(3,244)	(3,244)	(3,244)
Contingent consideration [19]	–	–	(1,492)	–	–	(1,492)	(1,492)
Accounts payable [16]	–	–	–	–	(3,207)	(3,207)	(3,207)
Derivative financial instruments [18]	–	(639)	–	–	–	(639)	(639)
Total financial liabilities	**–**	**(639)**	**(1,492)**	**–**	**(26,458)**	**(28,589)**	**(30,098)**

The fair value of bonds and notes is Level 1 and is calculated based on the observable market prices of the debt instruments or the present value of the future cash flows on the instrument, discounted at a market rate of interest for instruments with similar credit status, cash flows and maturity periods.

Fair value hierarchy

The table below analyses financial instruments carried at fair value, by valuation method. The different levels have been defined as follows:
- Level 1 – quoted prices (unadjusted) in active markets for identical assets and liabilities.
- Level 2 – observable inputs other than quoted prices in active markets for identical assets and liabilities.
- Level 3 – unobservable inputs.

Fair value hierarchy of financial instruments in millions of CHF

	Level 1	Level 2	Level 3	Total
Year ended 31 December 2016				
Marketable securities				
– Equity securities	69	–	–	69
– Debt securities	1,509	–	–	1,509
– Money market instruments and time accounts over three months	133	3,233	–	3,366
Derivative financial instruments	–	185	–	185
Available-for-sale investments – held at fair value [14]	132	117	–	249
Financial assets recognised at fair value	**1,843**	**3,535**	**–**	**5,378**
Derivative financial instruments	–	(447)	–	(447)
Contingent consideration	–	–	(1,089)	(1,089)
Financial liabilities recognised at fair value	**–**	**(447)**	**(1,089)**	**(1,536)**
Year ended 31 December 2015				
Marketable securities				
– Equity securities	105	–	–	105
– Debt securities	1,370	20	–	1,390
– Money market instruments and time accounts over three months	796	3,149	–	3,945
Derivative financial instruments	–	169	–	169
Available-for-sale investments – held at fair value [14]	61	158	–	219
Financial assets recognised at fair value	**2,332**	**3,496**	**–**	**5,828**
Derivative financial instruments	–	(639)	–	(639)
Contingent consideration	–	–	(1,492)	(1,492)
Financial liabilities recognised at fair value	**–**	**(639)**	**(1,492)**	**(2,131)**

Level 1 financial assets consist of treasury bills, bonds and quoted shares. Level 2 financial assets consist primarily of commercial paper, certificates of deposit and derivative financial instruments.

The Group determines Level 2 fair values using the following valuation techniques:
- Marketable securities and derivative financial instruments are based on valuation models that use observable market data for interest rates, yield curves, foreign exchange rates and implied volatilities for similar instruments at the measurement date.
- Available-for-sale investments are based on a valuation model derived from the most recently published observable financial prices.

The Group recognises transfers between levels of the fair value hierarchy as of the end of the reporting period during which the transfer has occurred. There were no significant transfers between Level 1 and Level 2 and vice versa during the year (2015: none).

Level 3 fair values

Details of the determination of Level 3 fair value measurements are set out below.

Contingent consideration arrangements in millions of CHF

	2016	2015
At 1 January	(1,492)	(815)
Arising from business combinations [5]	–	(567)
Utilised [5]	69	119
Total unrealised gains and losses included in the income statement		
– Unused amounts reversed	447	47
– Additional amount created	(39)	(239)
– Discount unwind included in financing costs	(53)	(40)
Total gains and losses included in other comprehensive income		
– Currency translation effects	(21)	3
At 31 December	**(1,089)**	**(1,492)**

Contingent consideration arrangements

The Group is party to certain contingent consideration arrangements arising from business combinations. The fair values are determined considering the expected payments, discounted to present value using risk-adjusted average discount rate of 3.2% (2015: 3.9%). The expected payments are determined by considering the possible scenarios of forecast sales and other performance criteria, the amount to be paid under each scenario, and the probability of each scenario. The significant unobservable inputs are the forecast sales, other performance criteria and the risk-adjusted discount rate. The estimated fair value would increase if the forecast sales or other performance criteria rates were higher or the risk-adjusted discount rate was lower. At 31 December 2016 the total potential payments under contingent consideration arrangements could be up to CHF 2.9 billion (2015: CHF 2.9 billion) as follows:

Potential payments under contingent consideration arrangements in millions of CHF

Acquisition	Year acquired	Operating segment	2016	2015
Seragon	2014	Roche Pharmaceuticals	997	964
Trophos	2015	Roche Pharmaceuticals	376	378
Dutalys	2014	Roche Pharmaceuticals	363	351
Santaris	2014	Roche Pharmaceuticals	203	196
Genia	2014	Diagnostics	230	222
GeneWeave	2015	Diagnostics	198	232
CMI	2013	Diagnostics	184	178
Ariosa	2015	Diagnostics	179	198
Others	–	Diagnostics	144	189
At 31 December			**2,874**	**2,908**

Derivative financial instruments

The Group has entered into various currency swaps for certain non-US dollar debt instruments. Cash collateral agreements were entered into with the counterparties to the currency swaps to mitigate counterparty risk. The following table sets out the carrying value of derivative financial instruments and the amounts that are subject to master netting agreements.

Derivative financial instruments in millions of CHF

	Assets			Liabilities		
	2016	2015	2014	2016	2015	2014
Foreign currency derivatives						
– Forward exchange contracts	162	134	99	(219)	(71)	(110)
– Cross-currency swaps	–	–	76	(220)	(561)	(145)
– Other	–	–	–	–	–	–
Interest rate derivatives						
– Swaps	23	35	19	(8)	(7)	(34)
– Other	–	–	–	–	–	–
Other derivatives	–	–	–	–	–	(384)
Carrying value of derivative financial instruments [15, 18]	**185**	**169**	**194**	**(447)**	**(639)**	**(673)**
Derivatives subject to master netting agreements	(72)	(54)	(72)	72	54	72
Collateral arrangements	13	(42)	(99)	289	496	175
Net amount	**126**	**73**	**23**	**(86)**	**(89)**	**(426)**

Collateral arrangements

On the due date of 4 March 2016 the Group redeemed the 5.625% fixed rate notes with a principal of EUR 2.1 billion. As a result hedges were terminated and cash was received by the Group from counterparties.

Movements in cash collateral other receivable (accrued liability) in millions of CHF

	2016	2015
At 1 January	454	76
Net cash delivered by (to) the Group	(152)	378
At 31 December	**302**	**454**

Hedge accounting

At 31 December 2016 the Group has the following cash flow hedges and fair value hedges which are designated in a qualifying hedge relationship.

Cash flow hedges. The Group has entered into cross-currency swaps to hedge foreign exchange and interest rate risk on some of the bonds and notes issued by the Group which are denominated in euro and pound sterling. At 31 December 2016 such instruments are recorded as a net fair value liability of CHF 220 million (2015: CHF 561 million). There was no ineffective portion.

Chugai has entered into foreign exchange forward contracts to hedge a part of its foreign translation exposure to Swiss franc and US dollar. At 31 December 2016 such instruments are recorded as fair value assets of CHF 45 million (2015: fair value liabilities of CHF 20 million). There was no ineffective portion.

The expected undiscounted cash flows from qualifying cash flow hedges, including interest payments during the duration of the derivative contract and final settlement on maturity, are shown in the table below.

Expected cash flows of qualifying cash flow hedges in millions of CHF

		2016			2015	
	Total	Less than 1 year	More than 1 year	Total	Less than 1 year	More than 1 year
Cash inflows	3,509	1,568	1,941	5,789	3,807	1,982
Cash outflows	(3,899)	(1,576)	(2,323)	(6,588)	(4,272)	(2,316)
Total cash inflow (outflow)	**(390)**	**(8)**	**(382)**	**(799)**	**(465)**	**(334)**

The undiscounted cash flows in the table above will affect profit and loss as shown below. These include interest payments during the duration of the derivative contract but do not include the final settlement on maturity.

Expected cash flows of qualifying cash flow hedges with impact on profit and loss in millions of CHF

		2016			2015	
	Total	Less than 1 year	More than 1 year	Total	Less than 1 year	More than 1 year
Cash inflows	419	84	335	633	212	421
Cash outflows	(550)	(111)	(439)	(806)	(275)	(531)
Total cash inflow (outflow)	**(131)**	**(27)**	**(104)**	**(173)**	**(63)**	**(110)**

The changes in the hedging reserve within equity are shown in Note 21.

Fair value hedges. The Group has entered into some interest rate swaps to hedge some of its fixed-term debt instruments. At 31 December 2016 such instruments are recorded as fair value liabilities of CHF 10 million (2015: CHF 6 million) and fair value assets of CHF 23 million (2015: CHF 35 million). During 2016 a loss of CHF 17 million was recorded on these interest rate swaps (2015: gain of CHF 44 million). As the fair value hedge had been highly effective since inception, the result of the interest rate swaps was largely offset by changes in the fair value of the hedged debt instruments.

Net investment hedges. The Group does not have any net investment hedges.

30. Related parties

Controlling shareholders

The share capital of Roche Holding Ltd, which is the Group's parent company, consists of 160,000,000 bearer shares.

At 31 December 2016 and 2015, based on information supplied to the Group, a shareholder group with pooled voting rights owned 72,018,000 shares, which represented 45.01% of the issued shares. This group consisted of Ms Vera Michalski-Hoffmann, Ms Maja Hoffmann, Mr André Hoffmann, Dr Andreas Oeri, Ms Sabine Duschmalé-Oeri, Ms Catherine Oeri, Mr Jörg Duschmalé, Mr Lukas Duschmalé and the charitable foundation Wolf. The shareholder pooling agreement has existed since 1948. The figures above do not include any shares without pooled voting rights that are held outside this group by individual members of the group. Ms Maja Oeri, formerly a member of the pool, now holds 8,091,900 shares representing 5.057% of the voting rights independently of the pool.

Mr André Hoffmann and Dr Andreas Oeri are members of the Board of Directors of Roche Holding Ltd. Mr Hoffmann received remuneration totalling CHF 439,411 (2015: CHF 424,065) and Dr Oeri received remuneration totalling CHF 360,000 (2015: CHF 360,000).

There were no other transactions between the Group and the individual members of the above shareholder group with the exception of Dr Jörg Duschmalé who works as a post-doc at Roche.

Subsidiaries and associates

A listing of the major Group subsidiaries and associates is included in Note 31. Transactions between the parent company and its subsidiaries and between subsidiaries are eliminated on consolidation. There were no significant transactions between the Group and its associates.

Key management personnel

Total remuneration of key management personnel was CHF 54 million (2015: CHF 55 million).

Members of the Board of Directors of Roche Holding Ltd receive an annual remuneration and payment for their time and expenses related to their membership of Board committees. Dr Franz and members of the Corporate Executive Committee (CEC) of Roche Holding Ltd receive remuneration, which consists of an annual salary, bonus and an expense allowance. The Group pays social insurance contributions in respect of the above remuneration and pays contributions to pension and other post-employment benefit plans for the Chairman of the Board of Directors and members of the CEC. The members of the CEC also participate in certain equity compensation plans as described below. The terms, vesting conditions and fair value of these awards are disclosed in Note 26. New members of the CEC are included in the table below for the full calendar year in which they joined the CEC. Similarly, members of the CEC retiring part way through the year are included for the full calendar year in which they left the CEC.

Remuneration of the members of the Board of Directors and the Corporate Executive Committee in millions of CHF

	2016	2015
Salaries, including cash-settled bonus	25	25
Bonus Stock Awards	6	7
Social security costs	2	4
Pensions and other post-employment benefits	4	3
Equity compensation plans	12	12
Board fees	4	3
Other employee benefits	1	1
Total	**54**	**55**

For the purposes of these remuneration disclosures the values for equity compensation plans, including the Bonus Stock Awards, are calculated based on the fair value used in Note 26. These represent the cost to the Group of such awards at grant date and reflect, amongst other matters, the observed exercise behaviour and exit rate for the whole population that receive the awards and initial simulations of any performance conditions.

The detailed disclosures regarding executive remuneration that are required by Swiss law are included in the Remuneration Report included in the Annual Report on pages 124 to 150. In those disclosures the values for equity compensation plans, including the Bonus Stock Awards, represent the fair value that the employee receives taking into account the preliminary assessment of any completed performance conditions. These fair values are shown in the table below, which reconciles those disclosures required by Swiss law to the above related party disclosures for key management personnel.

Reconciliation to executive remuneration disclosures required by Swiss law in millions of CHF

	2016	2015
Total remuneration of the members of the Board of Directors and Corporate Executive Committee (IFRS basis – see table above)	54	55
Deduct		
– Bonus Stock Awards (IFRS basis)	(6)	(7)
– Equity compensation plans (IFRS basis)	(12)	(12)
Add back		
– Bonus Stock Awards (Swiss legal basis)	3	4
– Equity compensation plans (Swiss legal basis)	15	14
Total remuneration of the members of the Board of Directors and Corporate Executive Committee (Swiss legal basis)	**54**	**54**
Of which (including social security costs)		
– Board of Directors (page 137 of the Annual Report)	10	9
– Corporate Executive Committee (page 146 of the Annual Report)	44	45

Bonus Stock Awards. The Chairman of the Board of Directors and the Chief Executive Officer will be granted Bonus Stock Awards in lieu of their cash-settled bonus for the financial year 2016. These will be issued by the end of April 2017. The number of awards and fair value per award will be calculated at the grant date.

Equity compensation plans. The members of the Corporate Executive Committee received equity compensation as shown in the following tables.

Number of rights, options and awards granted to members of the Corporate Executive Committee

	2016	2015
Roche Stock-settled Stock Appreciation Rights	286,142	172,515
Roche Restricted Stock Unit Plan	0	15,712
Roche Performance Share Plan	29,865	14,005

Contributions paid for members of the Corporate Executive Committee in millions of CHF

	2016	2015
Roche Connect	0.3	0.2

Transactions with former members of the Board of Directors and Corporate Executive Committee. Pensions totalling CHF 2 million were paid by the Group to former Corporate Executive Committee members (2015: CHF 2 million).

Defined benefit plans

Transactions between the Group and the various defined benefit plans for the employees of the Group are described in Note 25.

31. Subsidiaries and associates

Listed companies

Country	Company	City		Share capital (in millions)	Equity interest (in %)
Switzerland	Roche Holding Ltd Stock Exchange: SIX Swiss Exchange Zurich Valor Share: 1203211 Valor *Genussschein:* 1203204 ISIN Share: CH0012032113 ISIN *Genussschein:* CH0012032048 Market capitalisation: CHF 199,022.1 m	Basel	CHF	160.0	
Japan	Chugai Pharmaceutical Co., Ltd. Stock Exchange: Tokyo ISIN: JP3519400000 Market capitalisation: JPY 1,832,729 m	Tokyo	JPY	335.2	61.4
United States	Foundation Medicine, Inc. Stock Exchange: Nasdaq Stock Code: FMI Market capitalisation: USD 624.47 m	Cambridge	USD	(–)	59.6

Non-listed companies

Country	Company	City		Share capital (in millions)	Equity interest (in %)
Algeria	Roche Algérie S.p.A	Hydra	DZD	1.0	48
Argentina	Productos Roche S.A. Química e Industrial	Tigre	ARS	844.1	100
	Roche Diabetes Care Argentina S.A.	Tigre	ARS	87.4	100
	Vanguardia en productos farmacéuticos (VANPROFARMA) S.A.	Buenos Aires	ARS	13.8	100
Australia	Roche Diabetes Care Australia Pty Limited	Bella Vista	AUD	14.1	100
	Roche Diagnostics Australia Pty. Limited	Castle Hill	AUD	5.0	100
	Roche Products Pty. Limited	Dee Why	AUD	65.0	100
Austria	Dutalys GmbH	Vienna	EUR	(–)	100
	Roche Austria GmbH	Vienna	EUR	14.5	100
	Roche Diagnostics GmbH	Vienna	EUR	1.1	100
Azerbaijan	Roche Azerbaijan LLC	Baku	AZN	0.5	100
Bangladesh	Roche Bangladesh Limited	Dhaka	BDT	27.2	100
Belarus	FLLC 'Roche Products Limited'	Minsk	USD	1.5	100
Belgium	N.V. Roche S.A.	Brussels	EUR	32.0	100
	Roche Diagnostics Belgium NV	Brussels	EUR	3.8	100
Bermuda	Chemical Manufacturing and Trading Company Limited	Hamilton	USD	(–)	100
	Hoffmann-La Roche Products Limited	Hamilton	USD	(–)	100
	Roche Capital Services Ltd.	Hamilton	RUB	(–)	100
	Roche Catalyst Investments Ltd.	Hamilton	USD	(–)	100
	Roche Financial Investments Ltd.	Hamilton	USD	(–)	100
	Roche Financial Management Ltd.	Hamilton	USD	(–)	100
	Roche Financial Services Ltd.	Hamilton	USD	(–)	100
	Roche International Ltd.	Hamilton	USD	(–)	100
	Roche Intertrade Limited	Hamilton	USD	10.0	100
	Roche Operations Ltd.	Hamilton	USD	(–)	100
	Roche Services Holdings Ltd.	Hamilton	USD	(–)	100
	Syntex Pharmaceuticals International Ltd.	Hamilton	USD	(–)	100
Bolivia	Roche Bolivia SRL.	Santa Cruz	BOB	0.1	100
Bosnia and Herzegovina	Roche d.o.o. farmaceutsko drustvo – Roche Ltd. Pharmaceutical Company	Sarajevo	BAM	13.1	100
Brazil	Produtos Roche Químicos e Farmacêuticos S.A.	São Paulo	BRL	41.7	100
	Roche Diabetes Care Brasil Ltda.	São Paulo	BRL	(–)	100
	Roche Diagnostica Brasil Ltda.	São Paulo	BRL	459.3	100
Bulgaria	Roche Bulgaria EOOD	Sofia	BGN	5.1	100
Cameroon	Roche Cameroun SARL	Douala	XAF	60.0	100
Canada	Chempharm Limited	Mississauga	CAD	(–)	100
	Hoffmann-La Roche Limited	Mississauga	CAD	40.3	100
	Sapac Corporation Ltd.	Hamilton	CAD	(–)	100
Chile	Roche Chile Limitada	Santiago de Chile	CLP	70.9	100
China	Roche (China) Holding Ltd.	Shanghai	USD	37.3	100
	Roche Diagnostics (Hong Kong) Limited	Hong Kong	HKD	10.0	100
	Roche Diagnostics (Shanghai) Limited	Shanghai	USD	31.0	100
	Roche Diagnostics (Suzhou) Limited	Suzhou	USD	100.0	100
	Roche Hong Kong Limited	Hong Kong	HKD	10.0	100
	Roche R&D Center (China) Ltd.	Shanghai	USD	35.8	100
	Shanghai IEN Pharma Co., Ltd	Shanghai	CNY	5.0	100
	Shanghai Roche Pharmaceuticals Limited	Shanghai	USD	278.7	70
Colombia	Productos Roche S.A.	Bogotá	COP	26,923.7	100
Costa Rica	Roche Servicios S.A.	Heredia	USD	8.1	100
Côte d'Ivoire	Roche Côte d'Ivoire SARL	Abidjan	XOF	50.0	100
Croatia	Roche d.o.o.	Zagreb	HRK	4.8	100
Czech Republic	Roche s.r.o.	Prague	CZK	200.0	100
Denmark	Roche a/s, Medicinalvarer og Kemikalier	Hvidovre	DKK	4.0	100
	Roche Diagnostics a/s	Hvidovre	DKK	1.3	100
	Roche Innovation Center Copenhagen A/S	Hoersholm	DKK	100.1	100
Dominican Republic	Productos Roche Dominicana S.R.L.	Santo Domingo	DOP	0.6	100
Ecuador	Roche Ecuador S.A.	Quito	USD	28.1	100
Egypt	Roche Egypt for Manufacturing and Trading SAE	Cairo	EGP	1.0	100
	Roche Egypt LLC	Cairo	EGP	0.1	95
	RoDiagnostics Egypt for Trading S.A.E	Giza	EGP	0.3	100
El Salvador	Productos Roche (El Salvador) S.A. de C.V.	San Salvador	SVC	0.2	100
Estonia	Roche Eesti OÜ	Tallinn	EUR	0.1	100
Finland	Roche Diagnostics Oy	Espoo	EUR	0.2	100
	Roche Oy	Espoo	EUR	(–)	100

Country	Company	City		Share capital (in millions)	Equity interest (in %)
France	Institut Roche SAS	Boulogne-Billancourt	EUR	(–)	100
	Roche Diabetes Care France SAS	Meylan	EUR	4.5	100
	Roche Diagnostics France S.A.S.	Meylan	EUR	16.0	100
	Roche S.A.S.	Boulogne-Billancourt	EUR	38.2	100
	Trophos S.A.	Marseille	EUR	1.9	100
Georgia	Roche Georgia LLC	Tbilisi	GEL	0.5	100
Germany	Ascur Versicherungsvermittlungs GmbH	Grenzach-Wyhlen	EUR	(–)	100
	Galenus Mannheim Pharma GmbH	Mannheim	EUR	(–)	100
	Roche Beteiligungs GmbH	Grenzach-Wyhlen	EUR	3.6	100
	Roche Deutschland Holding GmbH	Grenzach-Wyhlen	EUR	6.0	100
	Roche Diabetes Care Deutschland GmbH	Mannheim	EUR	(–)	100
	Roche Diabetes Care GmbH	Mannheim	EUR	(–)	100
	Roche Diagnostics Deutschland GmbH	Mannheim	EUR	1.0	100
	Roche Diagnostics GmbH	Mannheim	EUR	94.6	100
	Roche Diagnostics IT Solutions GmbH	Berlin	EUR	(–)	100
	Roche mtm laboratories AG	Mannheim	EUR	1.4	100
	Roche Pharma AG	Grenzach-Wyhlen	EUR	61.4	100
	Roche PVT GmbH	Waiblingen	EUR	(–)	100
	Roche Real Estate Services Mannheim GmbH	Mannheim	EUR	1.8	100
	Signature Diagnostics GmbH	Potsdam	EUR	0.1	100
Ghana	Roche Products Ghana Limited	Accra	GHS	1.2	100
Greece	Roche (Hellas) S.A.	Athens	EUR	80.1	100
	Roche Diagnostics (Hellas) S.A.	Athens	EUR	48.7	100
Guatemala	Productos Roche Guatemala S.A.	Guatemala	GTQ	0.6	100
Honduras	Productos Roche (Honduras), S.A.	Tegucigalpa	HNL	(–)	100
Hungary	Roche (Hungary) Ltd.	Budapest	HUF	30.0	100
	Roche Services (Europe) Ltd.	Budapest	HUF	3.0	100
India	Roche Diabetes Care India Private Limited	Mumbai	INR	15.1	100
	Roche Diagnostics India Private Limited	Mumbai	INR	149.2	100
	Roche Products (India) Private Limited	Mumbai	INR	1,000.0	100
Indonesia	P.T. Roche Indonesia	Jakarta	IDR	1,323.0	98.6
Iran	Roche Pars Co. (Ltd.)	Tehran	IRR	41,610.0	100
Ireland	Roche Ireland Limited	Clarecastle	EUR	2.4	100
	Roche Products (Ireland) Limited	Dublin	EUR	(–)	100
Israel	Medingo Ltd.	Yoqneam Illit	ILS	8.0	100
	Roche Pharmaceuticals (Israel) Ltd.	Hod Hasharon	ILS	(–)	100
Italy	Roche Diabetes Care Italy S.P.A.	Monza	EUR	40.2	100
	Roche Diagnostics S.p.A.	Monza	EUR	18.1	100
	Roche S.p.A.	Monza	EUR	34.1	100
Japan	Roche DC Japan K. K.	Tokyo	JPY	10.0	100
	Roche Diagnostics K.K.	Tokyo	JPY	2,500.0	100
Jordan	F. Hoffmann-La Roche Ltd / Jordan P.S.C.	Amman	JOD	(–)	100
Kazakhstan	Roche Kazakhstan LLP	Almaty	KZT	150.0	100
Kenya	Roche Kenya Limited	Nairobi	KES	40.0	100
Latvia	Roche Latvija SIA	Riga	EUR	1.7	100
Lebanon	Roche Lebanon SARL	Beirut	LBP	1,000.0	100
Lithuania	UAB Roche Lietuva	Vilnius	EUR	0.2	100
Macedonia	Roche Makedonija DOOEL	Skopje	EUR	0.3	100
Malaysia	Roche (Malaysia) Sdn. Bhd.	Kuala Lumpur	MYR	4.0	100
	Roche Diagnostics (Malaysia) Sdn. Bhd.	Petaling Jaya	MYR	0.9	100
	Roche Services (Asia Pacific) Sdn Bhd	Kuala Lumpur	MYR	0.5	100
	Syntex Pharmaceuticals Sdn. Bhd.	Kuala Lumpur	MYR	(–)	100
Mauritius	Roche Products (Mauritius) Ltd	Quatre Bornes	MUR	4.0	100
Mexico	Productos Roche, S.A. de C.V.	Mexico City	MXN	82.6	100
	Roche Servicios de México, S.A. de C.V.	Mexico City	MXN	3.5	100
Moldova	Roche Products Limited S.R.L.	Chisinau	MDL	1.8	100
Morocco	Roche S.A.	Casablanca	MAD	59.5	100
Myanmar	Roche Myanmar Company Limited	Yangon	USD	(–)	100
Netherlands	Kapa Biosystems B.V.	Amsterdam	USD	(–)	100
	Roche Diabetes Care Nederland B.V.	Almere	EUR	(–)	100
	Roche Diagnostics Nederland B.V.	Almere	EUR	2.3	100
	Roche Finance Europe B.V.	Woerden	EUR	2.0	100
	Roche Nederland B.V.	Woerden	EUR	10.9	100
	Roche Pharmholding B.V.	Woerden	EUR	467.8	100
New Zealand	Roche Diagnostics NZ Limited	Auckland	NZD	3.0	100
	Roche Products (New Zealand) Limited	Auckland	NZD	13.5	100

Country	Company	City		Share capital (in millions)	Equity interest (in %)
Nicaragua	Productos Roche (Nicaragua) S.A.	Managua	NIO	0.9	100
Nigeria	Roche Products Limited	Lagos	NGN	200.0	100
Norway	Roche Diagnostics Norge A/S	Oslo	NOK	5.8	100
	Roche Norge A/S	Oslo	NOK	6.2	100
Pakistan	Roche Pakistan Limited	Karachi	PKR	38.3	100
Palestine	Roche Pharmaceuticals Palestine Ltd	Ramallah and Al-Bireh	USD	1.2	100
Panama	Productos Roche (Panama) S.A.	Panama City	PAB	(–)	100
	Productos Roche Interamericana S.A. (PRISA)	Panama City	USD	0.1	100
Peru	Productos Roche Química Farmacéutica S.A.	Lima	PEN	11.1	100
	Roche Farma (Peru) S.A.	Lima	PEN	38.1	100
Philippines	Roche (Philippines) Inc.	Taguig City	PHP	300.0	100
Poland	Roche Diabetes Care Polska sp. z o.o.	Warsaw	PLN	2.0	100
	Roche Diagnostics Polska Sp. z o.o.	Warsaw	PLN	8.0	100
	Roche Polska Sp. z o.o.	Warsaw	PLN	25.0	100
Portugal	Roche Farmacêutica Química, Lda.	Amadora	EUR	1.1	100
	Roche Sistemas de Diagnósticos, Sociedade Unipessoal, Lda.	Amadora	EUR	2.6	100
Puerto Rico	Roche Products Inc.	Ponce	USD	0.5	100
	Syntex Puerto Rico Inc.	Ponce	USD	(–)	100
Romania	Roche Romania S.R.L.	Bucharest	RON	472.2	100
Russian Federation	Limited Liability Company Roche Diabetes Care Rus	Moscow	RUB	100.0	100
	Limited Liability Company Roche Diagnostics Rus	Moscow	RUB	250.0	100
	Roche – Moscow Ltd.	Moscow	RUB	2.6	100
Serbia	Roche d.o.o. Beograd	Belgrade	EUR	9.6	100
Singapore	Roche Diabetes Care Asia Pacific Pte. Ltd.	Singapore	SGD	0.6	100
	Roche Diagnostics Asia Pacific Pte. Ltd.	Singapore	SGD	20.4	100
	Roche Singapore Pte. Ltd.	Singapore	SGD	4.0	100
	Roche Singapore Technical Operations, Pte. Ltd.	Singapore	USD	35.0	100
Slovakia	Roche Slovensko, S.R.O.	Bratislava	EUR	0.3	100
Slovenia	Roche farmacevtska druzba d.o.o.	Ljubljana	EUR	0.2	100
South Africa	Kapa Biosystems, (Pty) Ltd	Cape Town	ZAR	(–)	100
	Roche Diabetes Care South Africa (Pty) Ltd	Randburg	ZAR	15.0	100
	Roche Products (Proprietary) Limited	Illovo	ZAR	60.0	100
South Korea	Roche Diagnostics Korea Co., Ltd.	Seoul	KRW	22,969.0	100
	Roche Korea Company Ltd.	Seoul	KRW	13,375.0	100
Spain	Emminens Healthcare Services S.L.	Madrid	EUR	1.8	100
	Roche Diabetes Care Spain, S.L.	Barcelona	EUR	1.0	100
	Roche Diagnostics S.L.	Barcelona	EUR	17.0	100
	Roche Farma S.A.	Madrid	EUR	45.0	100
Sri Lanka	Roche Products Colombo (Private) Limited	Colombo	LKR	14.0	100
Sweden	Roche AB	Stockholm	SEK	20.0	100
	Roche Diagnostics Scandinavia AB	Bromma	SEK	9.0	100
Switzerland	Biopharm AG	Basel	CHF	0.3	100
	F. Hoffmann-La Roche Ltd	Basel	CHF	150.0	100
	Hoffmann-La Roche Ltd	Basel	CHF	0.5	100
	InterMune International AG	Basel	CHF	10.0	100
	Museum Tinguely AG	Basel	CHF	0.1	100
	Phaor AG	Basel	CHF	0.2	100
	Rabbit-Air Ltd	Bachenbülach	CHF	3.0	100
	Roche Capital Market Ltd	Basel	CHF	1.0	100
	Roche Chemische Unternehmungen AG	Basel	CHF	1.3	100
	Roche Diabetes Care (Switzerland) Ltd	Rotkreuz	CHF	0.1	100
	Roche Diabetes Care Ltd.	Rotkreuz	CHF	0.9	100
	Roche Diagnostics (Switzerland) Ltd	Rotkreuz	CHF	1.0	100
	Roche Diagnostics International Ltd	Rotkreuz	CHF	20.0	100
	Roche Finance Ltd	Basel	CHF	409.2	100
	Roche Forum Buonas Ltd	Buonas	CHF	0.1	100
	Roche Glycart Ltd	Schlieren	CHF	0.3	100
	Roche Long Term Foundation	Basel	CHF	0.5	100
	Roche Pharma (Switzerland) Ltd	Reinach	CHF	2.0	100
	Syntex Pharm AG	Rotkreuz	CHF	0.5	100
	Tavero AG	Basel	CHF	0.1	100
Taiwan	Roche Diagnostics Ltd.	Taipei	TWD	245.0	100
	Roche Products Ltd.	Taipei	TWD	1,000.0	100
Thailand	Roche Diagnostics (Thailand) Limited	Bangkok	THB	103.0	100
	Roche Thailand Limited	Bangkok	THB	12.0	100
Tunisia	Roche Tunisie SA	Tunis	TND	0.8	100
Turkey	Roche Diagnostics Turkey Anonim Sirketi	Istanbul	TRY	80.0	100
	Roche Müstahzarlari Sanayi Anonim Sirketi	Istanbul	TRY	249.5	100
Ukraine	Roche Ukraine LLC	Kiev	UAH	124.0	100
United Arab Emirates	Roche Diabetes Care Middle East FZCO	Dubai	AED	0.5	100
	Roche Diagnostics Middle East FZCO	Dubai	AED	19.0	100
	Roche Middle East FZCO	Dubai	AED	0.5	100
	Roche Pharmaceuticals Middle East FZCO	Dubai	AED	0.5	100
United Kingdom	InterMune Bristol Limited	Welwyn Garden City	GBP	(–)	100
	InterMune Holdings Limited	Welwyn Garden City	GBP	(–)	100
	InterMune UK & I Limited	Welwyn Garden City	GBP	(–)	100
	InterMune UK Limited	Welwyn Garden City	GBP	(–)	100
	Kapa Biosystems Ltd	London	GBP	(–)	100
	Piramed Limited	Welwyn Garden City	GBP	(–)	100
	Roche Diabetes Care Limited	Burgess Hill	GBP	0.4	100
	Roche Diagnostics Ltd.	Burgess Hill	GBP	32.6	100
	Roche Holding (UK) Limited	Welwyn Garden City	GBP	100.0	100
	Roche Products Limited	Welwyn Garden City	GBP	98.3	100
	Roche Registration Limited	Welwyn Garden City	GBP	(–)	100
United States	454 Life Sciences Corporation	Little Falls	USD	(–)	100
	Adheron Therapeutics Inc.	Wilmington	USD	(–)	100
	Anadys Pharmaceuticals, Inc.	South San Francisco	USD	(–)	100
	Ariosa Diagnostics, Inc.	San Jose	USD	(–)	100
	Bina Technologies, Inc.	Belmont	USD	(–)	100
	BioVeris Corporation	Indianapolis	USD	(–)	100
	ForSight VISION4, Inc.	South San Francisco	USD	(–)	100
	Genentech USA, Inc.	South San Francisco	USD	(–)	100
	Genentech, Inc.	South San Francisco	USD	(–)	100
	GeneWeave Biosciences, Inc.	Los Gatos	USD	(–)	100
	Genia Technologies, Inc.	Santa Clara	USD	(–)	100
	HLR Consumer Health, Inc.	Little Falls	USD	(–)	100
	Hoffmann-La Roche Inc.	Little Falls	USD	3.0	100
	IGEN International, Inc.	Pleasanton	USD	(–)	100
	InterMune, Inc.	South San Francisco	USD	(–)	100
	IQuum, Inc.	Marlborough	USD	(–)	100
	Kapa Biosystems, Inc.	Wilmington	USD	(–)	100
	Memory Pharmaceuticals Corp.	Little Falls	USD	(–)	100
	Roche Carolina Inc.	Florence	USD	(–)	100
	Roche Diabetes Care, Inc.	Indianapolis	USD	(–)	100
	Roche Diagnostics Corporation	Indianapolis	USD	(–)	100
	Roche Diagnostics Hematology, Inc.	Westborough	USD	(–)	100
	Roche Diagnostics Operations, Inc.	Indianapolis	USD	(–)	100
	Roche Health Solutions Inc.	Indianapolis	USD	(–)	100
	Roche Holdings, Inc.	South San Francisco	USD	1.0	100
	Roche Laboratories Inc.	Little Falls	USD	(–)	100
	Roche Molecular Systems, Inc.	Pleasanton	USD	(–)	100
	Roche Palo Alto LLC	South San Francisco	USD	(–)	100
	Roche Sequencing Solutions, Inc.	Pleasanton	USD	(–)	100
	Roche TCRC, Inc.	New York	USD	(–)	100
	Seragon Pharmaceuticals Inc.	South San Francisco	USD	(–)	100
	Spring Bioscience Corp.	Pleasanton	USD	(–)	100
	Tensha Therapeutics, Inc.	South San Francisco	USD	(–)	100
	Ventana Medical Systems, Inc.	Tucson	USD	(–)	100
Uruguay	Roche International Ltd. (Montevideo Branch)	Montevideo	UYU	(–)	100
Venezuela	Productos Roche S.A.	Caracas	VEF	156.9	100
Vietnam	Roche Vietnam Co., Ltd.	Ho Chi Minh City	USD	5.0	100

(–) = share capital of less than 100,000 local currency units.

32. Significant accounting policies

Consolidation policy

Subsidiaries are all companies over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Companies acquired during the year are consolidated from the date on which control is transferred to the Group, and subsidiaries to be divested are included up to the date on which control passes from the Group. Inter-company balances, transactions and resulting unrealised income are eliminated in full. Changes in ownership interests in subsidiaries are accounted for as equity transactions if they occur after control has already been obtained and if they do not result in a loss of control. Associates are companies over which the Group exercises, or has the power to exercise, significant influence, but which it does not control and they are accounted for using the equity method.

Segment reporting

For the purpose of segment reporting the Group's Corporate Executive Committee (CEC) is considered to be the Group's Chief Operating Decision Maker. The determination of the Group's operating segments is based on the organisation units for which information is reported to the CEC on a regular basis. The information provided is used as the basis of the segment revenue and profit disclosures reported in Note 2, with the geographic analysis based on the location of customers. Selected segment balance sheet information is also routinely provided to the CEC.

Transfer prices between operating segments are set on an arm's length basis. Operating assets and liabilities consist of property, plant and equipment, goodwill and intangible assets, trade receivables/payables, inventories and other assets and liabilities, such as provisions, which can be reasonably attributed to the reported operating segments. Non-operating assets and liabilities mainly include current and deferred income tax balances, post-employment benefit assets/liabilities and financial assets/liabilities such as cash, marketable securities, investments and debt.

Foreign currency translation

The Annual Financial Statements are presented in Swiss francs. Most Group companies use their local currency as their functional currency. Certain Group companies use other currencies (such as US dollar, Swiss franc or euro) as their functional currency where this is the currency of the primary economic environment in which the entity operates. Local transactions in other currencies are initially reported using the exchange rate at the date of the transaction. Gains and losses from the settlement of such transactions and gains and losses on translation of monetary assets and liabilities denominated in other currencies are included in income, except when they are qualifying cash flow hedges or arise on monetary items that, in substance, form part of the Group's net investment in a foreign entity. In such cases the gains and losses are deferred into other comprehensive income.

Upon consolidation, assets and liabilities of Group companies using functional currencies other than Swiss francs are translated into Swiss francs using year-end rates of exchange. The income statement and statement of cash flows are translated at the average rates of exchange for the year. Translation differences due to the changes in exchange rates between the beginning and the end of the year and the difference between net income translated at the average and year-end exchange rates are taken directly to other comprehensive income.

Revenues

Sales represent amounts received and receivable for goods supplied to customers after deducting trade discounts, cash discounts and volume rebates, and exclude value added taxes and other taxes directly linked to sales. Revenues from the sale of products are recognised upon transfer to the customer of significant risks and rewards. Trade discounts, cash discounts and volume rebates are recorded on an accrual basis consistent with the recognition of the related sales. Estimates of expected sales returns, charge-backs and other rebates, including Medicaid in the US and similar rebates in other countries, are also deducted from sales and recorded as accrued liabilities or provisions or as a deduction from accounts receivable. Such estimates are based on analyses of existing contractual or legislatively mandated obligations, historical trends and the Group's experience. If the circumstances are such that the level of sales returns, and hence revenues, cannot be reliably measured, then sales are only recognised when the right of return expires, which is generally upon prescription of the products to patients. Other revenues are recorded as earned or as the services are performed. Single transactions are split into separately identifiable components to reflect the substance of the transaction, where necessary. Conversely, two or more transactions may be considered together for revenue recognition purposes, where the commercial effect cannot be understood without reference to the series of transactions as a whole.

Cost of sales

Cost of sales includes the corresponding direct production costs and related production overheads of goods sold and services rendered. Royalties, alliance and collaboration expenses, including all collaboration profit-sharing arrangements are also reported as part of cost of sales. Start-up costs between validation and the achievement of normal production capacity are expensed as incurred.

Research and development

Internal research and development activities are expensed as incurred for the following:

- Internal research costs incurred for the purpose of gaining new scientific or technical knowledge and understanding.
- Internal development costs incurred for the application of research findings or other knowledge to plan and develop new products for commercial production. The development projects undertaken by the Group are subject to technical, regulatory and other uncertainties, such that, in the opinion of management, the criteria for capitalisation as intangible assets are not met prior to obtaining marketing approval by the regulatory authorities in major markets.
- Post-marketing studies after regulatory approval, such as phase IV costs in the pharmaceuticals business, generally involve safety surveillance and ongoing technical support of a drug after it receives marketing approval to be sold. They may be required by regulatory authorities or may be undertaken for safety or commercial reasons. The costs of such post-marketing studies are not capitalised as intangible assets, as in the opinion of management, they do not generate separately identifiable incremental future economic benefits that can be reliably measured.

Acquired in-process research and development resources obtained through in-licensing arrangements, business combinations or separate asset purchases are capitalised as intangible assets. The acquired asset must be controlled by the Group, be separately identifiable and expected to generate future economic benefits, even if uncertainty exists as to whether the research and development will ultimately result in a marketable product. Consequently, upfront and milestone payments to third parties for pharmaceutical products or compounds before regulatory marketing approval are recognised as intangible assets. Assets acquired through such arrangements are measured on the basis set out in the 'Intangible assets' policy. Subsequent internal research and development costs incurred post-acquisition are treated in the same way as other internal research and development costs. If research and development are embedded in contracts for strategic alliances, the Group carefully assesses whether upfront or milestone payments constitute funding of research and development work or acquisition of an asset.

Licensing, milestone and other upfront receipts

Royalty income is recognised on an accrual basis in accordance with the substance of the respective licensing agreements. If the collectability of a royalty amount is not reasonably assured, those royalties are recognised as revenue when the cash is received. Certain Group companies receive upfront, milestone and other similar payments from third parties relating to the sale or licensing of products or technology. Revenue associated with performance milestones is recognised based on achievement of the deliverables as defined in the respective agreements. Upfront payments and licence fees for which there are subsequent deliverables are initially reported as deferred income and are recognised in income as earned over the period of the development collaboration or the manufacturing obligation.

Employee benefits

Short-term employee benefits include wages, salaries, social security contributions, paid annual leave and sick leave, profit sharing and bonuses, and non-monetary benefits for current employees. The costs are recognised within the operating results when the employee has rendered the associated service. The Group recognises a liability for profit sharing and bonuses where contractually obliged or where there is a past practice that has created a constructive obligation.

Long-term employee benefits include long-service or sabbatical leave, long-service benefits and long-term disability benefits. The expected costs of these benefits are accrued over the period of employment. Any changes in the carrying value of other long-term employee benefit liabilities are recognised within the operating results.

Termination benefits are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. Termination costs are recognised at the earlier of when the Group can no longer withdraw the offer of the benefits or when the Group recognises any related restructuring costs.

Pensions and other post-employment benefits

For defined contribution plans the Group contributions are recognised within the operating results when the employee has rendered the associated service. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in future payments is available.

For defined benefit plans the liability recognised in the balance sheet is the present value of the defined benefit obligation less the fair value of the plan assets. All changes in the net defined benefit liability are recognised as they occur as follows:

Recognised in the income statement:
- Current service costs are charged to the appropriate income statement heading within the operating results.
- Past service costs, including curtailment gains or losses, are recognised immediately in general and administration within the operating results.
- Settlement gains or losses are recognised in general and administration within the operating results.
- Net interest on the net defined benefit liability is recognised in financing costs.

Recognised in other comprehensive income:
- Actuarial gains and losses arising from experience adjustments (the difference between previous assumptions and what has actually occurred) and changes in actuarial assumptions.
- The return on plan assets, excluding amounts included in net interest on the net defined benefit liability.
- Any change in the limit on the recognition of plan assets, excluding amounts included in net interest on the net defined benefit liability.

Net interest on the net defined benefit liability is comprised of interest income on plan assets, interest cost on the defined benefit obligation and interest on the effect of the limit on the recognition of pension assets. The net interest is calculated using the same discount rate that is used in calculating the defined benefit obligation, applied to the net defined liability at the start of the period, taking account of any changes from contribution or benefit payments.

Pension assets and liabilities in different defined benefit plans are not offset unless the Group has a legally enforceable right to use the surplus in one plan to settle obligations in the other plan.

Equity compensation plans

The fair value of all equity compensation awards granted to employees is estimated at the grant date and recorded as an expense over the vesting period. The expense is charged to the appropriate income statement heading within the operating results. For equity-settled plans, an increase in equity is recorded for this expense and any subsequent cash flows from exercises of vested awards are recorded as changes in equity.

Property, plant and equipment

Property, plant and equipment are initially recorded at cost of purchase or construction, and include all costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. These include items such as costs of site preparation, installation and assembly costs and professional fees. The net costs of testing whether the asset is functioning properly, including validation costs, are also included in the initially recorded cost of construction. Interest and other borrowing costs incurred with respect to qualifying assets are capitalised and included in the carrying value of the assets. Property, plant and equipment are depreciated on a straight-line basis, except for land, which is not depreciated. The estimated useful lives of major classes of depreciable assets are as follows:

Land improvements	40 years
Buildings	10–50 years
Machinery and equipment	4–15 years
Diagnostic instruments	3–5 years
Office equipment	3–6 years
Motor vehicles	5–8 years

Where parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate components. The estimated useful lives of the assets are regularly reviewed and, if necessary, the future depreciation charges are accelerated. Repairs and maintenance costs are expensed as incurred.

Leases

Where the Group is the lessee. Finance leases exist when substantially all of the risks and rewards of ownership are transferred to the Group. Finance leases are capitalised at the start of the lease at fair value, or the present value of the minimum lease payments, if lower. The rental obligation, net of finance charges, is reported within debt. Finance lease assets are depreciated over the shorter of the lease term and its useful life. The interest element of the lease payment is charged against income over the lease term based on the effective interest rate method. Operating leases exist when substantially all of the risks and rewards of ownership are not transferred to the Group. Payments made under operating leases are charged against income on a straight-line basis over the period of the lease.

Where the Group is the lessor. Certain assets, mainly Diagnostics instruments, are leased to third parties through both finance and operating lease arrangements. Finance lease assets are reported as receivables at an amount equal to the net investment in the lease. Lease income from finance leases is recognised over the term of the lease based on the effective interest rate method. Operating lease assets are reported within property, plant and equipment. Lease income from operating leases is recognised over the lease term on a straight-line basis.

Business combinations

Business combinations are accounted for using the acquisition method of accounting. At the date of acquisition the Group initially recognises the fair value of the identifiable assets acquired, the liabilities assumed and any non-controlling interest in the acquired business. The consideration transferred is measured at fair value at the date of acquisition. Where the Group does not acquire 100% ownership of the acquired business, non-controlling interests are recorded either at fair value or as the proportion of the fair value of the acquired net assets attributable to the non-controlling interest. Directly attributable acquisition-related costs are expensed as incurred within general and administration expenses.

Goodwill

Goodwill arises in a business combination and is the excess of the consideration transferred to acquire the business over the underlying fair value of the net identified assets acquired. Goodwill is not amortised but is tested for impairment at least annually and upon the occurrence of an indication of impairment.

Intangible assets

Purchased patents, licences, trademarks and other intangible assets are initially recorded at cost. Assets that have been acquired through a business combination are initially recorded at fair value. Once available for use, intangible assets are amortised on a straight-line basis over their useful lives. Intangible assets are reviewed for impairment at each reporting date. The estimated useful life is the lower of the legal duration and the economic useful life. The estimated useful lives of intangible assets are regularly reviewed. Estimated useful lives of major classes of amortisable intangible assets are as follows:

Product intangibles in use	up to 20 years
Marketing intangibles in use	up to 10 years
Technology intangibles in use	up to 14 years

Impairment of property, plant and equipment and intangible assets

An impairment assessment is carried out when there is evidence that an asset may be impaired. In addition, intangible assets that are not yet available for use are tested for impairment annually. When the recoverable amount of an asset, being the higher of its fair value less costs of disposal and its value in use, is less than its carrying value, then the carrying value is reduced to its recoverable amount. This reduction is reported in the income statement as an impairment loss. Value in use is calculated using estimated cash flows, generally over a five-year period, with extrapolating projections for subsequent years. These are discounted using an appropriate long-term interest rate. When an impairment loss arises, the useful life of the asset is reviewed and, if necessary, the future depreciation/amortisation charge is accelerated. If the amount of impairment loss subsequently decreases and the decrease can be related objectively to an event occurring after the impairment was recognised, then the previously recognised impairment loss is reversed through the income statement as an impairment reversal.

Impairment of goodwill

Goodwill is assessed for impairment at each reporting date and is additionally tested annually for impairment. Goodwill is allocated to cash-generating units and when the recoverable amount of the cash-generating unit, being the higher of its fair value less costs of disposal or its value in use, is less than its carrying value, then the carrying value of the goodwill is reduced to its recoverable amount. This reduction is reported in the income statement as an impairment loss. When an acquired business that is included within a cash-generating unit permanently ceases to operate then it is treated as a disposal of that business. For separately identifiable goodwill that was generated on the initial acquisition of that business and where all of the factors that made up that goodwill are entirely unrelated to the continuing operations of the cash-generating unit, then the goodwill is deemed to have been disposed of and is fully impaired. The impairment testing methodology is further described in Note 8.

Inventories

Inventories are stated at the lower of cost and net realisable value. The cost of finished goods and work in process includes raw materials, direct labour and other directly attributable costs and overheads based upon the normal capacity of production facilities. Cost is determined using the weighted average method. Net realisable value is the estimated selling price less cost to completion and selling expenses.

Accounts receivable

Accounts receivable are carried at the original invoice amount less allowances made for doubtful accounts, trade discounts, cash discounts, volume rebates and similar allowances. An allowance for doubtful accounts is recorded where there is objective evidence that the Group will not be able to collect all amounts due. These estimates are based on specific indicators, such as the ageing of customer balances, specific credit circumstances and the Group's historical experience, taking also into account economic conditions. Expenses for doubtful trade receivables are recognised within marketing and distribution expenses. Trade discounts, cash discounts, volume rebates and similar allowances are recorded on an accrual basis consistent with the recognition of the related sales, using estimates based on existing contractual obligations, historical trends and the Group's experience.

Cash and cash equivalents

Cash and cash equivalents include cash on hand and time, call and current balances with banks and similar institutions. Such balances are only reported as cash equivalents if they are readily convertible to known amounts of cash, are subject to insignificant risk of changes in their fair value and have a maturity of three months or less from the date of acquisition.

Provisions and contingencies

Provisions are recognised where a legal or constructive obligation has been incurred which will probably lead to an outflow of resources that can be reliably estimated. In particular, restructuring provisions are recognised when the Group has a detailed formal plan that has either commenced implementation or has been announced. Provisions are recorded for the estimated ultimate liability that is expected to arise and are discounted when the time value of money is material. A contingent liability is disclosed where the existence of the obligation will only be confirmed by future events or where the amount of the obligation cannot be measured with reasonable reliability. Contingent assets are not recognised, but are disclosed where an inflow of economic benefits is probable.

Fair values

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. It is determined by reference to quoted market prices or by the use of established valuation techniques such as option pricing models and the discounted cash flow method if quoted prices in an active market are not available.

Financial instruments

Financial instruments are classified into the following categories which are disclosed in Note 29.

Available-for-sale. These are non-derivative financial assets that are either designated as such or are not classified in any other financial asset category. Available-for-sale assets are initially recorded and subsequently carried at fair value. Changes in fair value are recorded in other comprehensive income, except for impairments and interest and foreign exchange components. When an investment is derecognised, the cumulative gains and losses in equity are reclassified to financial income (expense). Available-for-sale assets are mainly comprised of marketable securities.

Fair value – hedging instruments. These are derivative financial instruments that are used to manage the exposures to foreign currency, interest rate, equity market and credit risks. Derivative financial instruments are initially recorded and subsequently carried at fair value. Apart from those derivatives designated as qualifying cash flow hedging instruments, all changes in fair value are recorded as other financial income (expense).

Fair value – designated. These are non-derivative financial instruments that are designated as fair value through profit or loss on initial recognition. Designated fair value instruments are initially recorded and subsequently carried at fair value with changes in fair value recorded in the income statement. Designated fair value instruments are mainly comprised of contingent consideration liabilities with changes in fair value recorded in general and administration within the operating results.

Loans and receivables. These are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables are initially recorded at fair value and subsequently carried at amortised cost using the effective interest rate method, less any impairment losses. Loans and receivables are mainly comprised of accounts receivable and cash and cash equivalents.

Other financial liabilities. These are non-derivative financial liabilities. Other financial liabilities are initially recorded at fair value and subsequently carried at amortised cost using the effective interest rate method. Other financial liabilities are mainly comprised of debt and trade payables.

A financial asset is derecognised when the contractual cash flows from the asset expire or when the Group transfers the rights to receive the contractual cash flows from the financial assets in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred. A financial liability is derecognised when the contractual obligations are discharged, cancelled or expire.

Impairment of financial assets

Financial assets are individually assessed for possible impairment at each reporting date. An impairment charge is recorded where there is objective evidence of impairment, such as where the issuer is in bankruptcy, default or other significant financial difficulty. Available-for-sale equity securities that have a market value of more than 25% below their original cost, or have a market value below their original cost for a sustained six-month period will be considered as impaired.

For financial assets carried at amortised cost, any impairment charge is the difference between the carrying value and the recoverable amount, calculated using estimated future cash flows discounted using the original effective interest rate. For available-for-sale financial assets, any impairment charge is the amount currently carried in other comprehensive income for the difference between the original cost and the fair value.

An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognised. For debt securities measured at amortised cost or available-for-sale, the reversal is recognised in income. For equity securities held as available-for-sale, the reversal is recognised directly in other comprehensive income.

Hedge accounting

The Group uses derivatives to manage its exposures to foreign currency, interest rate, equity market and credit risks. The instruments used may include interest rate swaps, cross-currency swaps, forwards contracts and options. The Group generally limits the use of hedge accounting to certain significant transactions. To qualify for hedge accounting, the hedging relationship must meet several strict conditions on documentation, probability of occurrence, hedge effectiveness and reliability of measurement. While many of these transactions can be considered as hedges in economic terms, if the required conditions are not met, then the relationship does not qualify for hedge accounting. In this case the hedging instrument and the hedged item are reported independently as if there were no hedging relationship, which means that any derivatives are reported at fair value, with changes in fair value included in financial income (expense).

Cash flow hedge. This is a hedge of the exposure to variability in cash flows that is attributable to a particular risk associated with a recognised asset or liability or a highly probable forecast transaction and could affect profit or loss. The hedging instrument is recorded at fair value. The effective portion of the hedge is included in other comprehensive income and any ineffective portion is reported in financial income (expense). If the hedging relationship is the hedge of the foreign currency risk of a firm commitment or highly probable forecasted transaction that results in the recognition of a non-financial item, the cumulative changes in the fair value of the hedging instrument that have been recorded in other comprehensive income are included in the initial carrying value of the non-financial item at the date of recognition. For all other cash flow hedges, the cumulative changes in the fair value of the hedging instrument that have been recorded in other comprehensive income are included in financial income (expense) when the forecasted transaction affects net income.

Fair value hedge. This is a hedge of the exposure to changes in fair value of a recognised asset or liability, or an unrecognised firm commitment, or an identified portion of such an asset, liability or firm commitment, that is attributable to a particular risk and could affect profit or loss. The hedging instrument is recorded at fair value and the hedged item is recorded at its previous carrying value, adjusted for any changes in fair value that are attributable to the hedged risk. Changes in the fair values are reported in financial income (expense).

Debt

Debt instruments are initially recorded at cost, which is the proceeds received, net of transaction costs. Subsequently they are reported at amortised cost. Any discount between the net proceeds received and the principal value due on redemption is amortised over the duration of the debt instrument and is recognised as part of financing costs using the effective interest rate method.

Taxation

Income taxes include all taxes based upon the taxable profits of the Group, including withholding taxes payable on the distribution of retained earnings within the Group. Other taxes not based on income, such as property and capital taxes, are included within general and administration expenses.

Liabilities for income taxes, mainly withholding taxes, which could arise on the remittance of retained earnings, principally relating to subsidiaries, are only recognised where it is probable that such earnings will be remitted in the foreseeable future. Where the amount of tax liabilities is uncertain, accruals are recorded within income tax liabilities for management's best estimate of the ultimate liability that is expected to arise based on the specific circumstances and the Group's historical experience.

Deferred tax assets and liabilities are recognised on temporary differences between the tax bases of assets and liabilities and their carrying values. Deferred tax assets are recognised to the extent that it is probable that future taxable profit will be available against which the unused tax losses can be utilised.

Current and deferred tax assets and liabilities are offset when the income taxes are levied by the same taxation authority and when there is a legally enforceable right to offset them. Deferred taxes are determined based on the currently enacted tax rates applicable in each tax jurisdiction where the Group operates.

Own equity instruments

The Group's holdings in its own equity instruments are recorded as a deduction from equity. The original purchase cost, consideration received for subsequent resale of these equity instruments and other movements are reported as changes in equity. These instruments are held for the Group's potential conversion obligations that may arise from the Group's equity compensation plans.

Changes in accounting policies

In 2016 the Group has implemented various minor amendments to existing standards and interpretations, which have no material impact on the Group's overall results and financial position.

Future new and revised standards

The Group is currently assessing the potential impacts of the various new and revised standards and interpretations that will be mandatory from 1 January 2017 which the Group has not yet applied. Based on the analysis to date, the Group does not anticipate that these will have a material impact on the Group's overall results and financial position.

The Group is also assessing other new and revised standards which are not mandatory until after 2017.

IFRS 9 'Financial Instruments'. The Group plans to implement the new standard effective 1 January 2018 and will apply the exemption from full retrospective application for the classification and measurement requirements, including impairment, meaning that the comparative 2017 results will not be restated when the new standard is applied. The hedge accounting requirements will be applied prospectively. The new standard will result in an increased volume of disclosure information in the Annual Financial Statements.

The standard deals with the classification, recognition and measurement (including impairment) of financial instruments. Gains and losses which the Group currently recognises in the statement of other comprehensive income on remeasuring assets classified as 'available-for-sale' will in future be recognised in the income statement for those assets which will be classified at fair value through profit or loss and for equities where the fair value through other comprehensive income irrevocable option will not be used. Impairment of financial assets, including trade and lease receivables, will be assessed using an expected loss model rather than an incurred loss model. The new standard also introduces a new hedge accounting model, which requires hedge accounting relationships to be based upon the Group's own risk management strategy and objectives and to be discontinued only when the relationships no longer qualify for hedge accounting. The Group's initial assessment is that the existing hedge relationships will continue to be designated as such under the new hedge accounting requirements.

IFRS 15 'Revenues from Contracts with Customers'. The Group plans to implement the new standard effective 1 January 2018 and will apply the full retrospective method for the transition. This would normally mean that the comparative 2017 results would be restated when the new standard is applied, however since the Group does not anticipate that the new standard will actually change the amounts of revenue recognised for 2017 then no restatement should be necessary. The Group also plans to use the practical expedient to not disclose the amount of the transaction price allocated to remaining performance obligations for 2017. The new standard will result in an increased volume of disclosure information in the Annual Financial Statements.

The new standard contains a new set of principles on when and how to recognise and measure revenue as well as new requirements related to presentation. The core principle in that framework is that revenue should be recognised dependent on the transfer of promised goods or services to the customer for an amount that reflects the consideration which should be received in exchange for those goods or services. The objective of the standard is to provide a five-step approach to revenue recognition that includes identifying contracts with customers, identifying performance obligations, determining transaction prices, allocating transaction prices to performance obligations, and recognising revenue when or as performance obligations are satisfied.

IFRS 16 'Leases'. The Group plans to implement the new standard effective 1 January 2019 and will apply the cumulative catch-up method for the transition, meaning that the comparative 2018 results will not be restated when the new standard is applied. The new standard will result in an increased volume of disclosure information in the Annual Financial Statements.

The main impact of the new standard will be to bring operating leases on-balance sheet. The Group is assessing the potential impact, but currently anticipates that the new standard will result in the carrying value of property, plant and equipment being increased by at least CHF 1 billion, with debt increased by a similar amount. The application of the new standard will result in part of what are currently reported as operating lease costs being recorded as interest expenses. Given the leases involved and the current low interest rate environment the Group does not currently expect this effect to be material.

Report of Roche Management on Internal Control over Financial Reporting

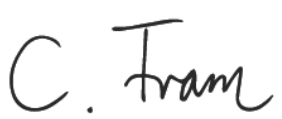
Report of Roche Management on Internal Control over Financial Reporting

The Board of Directors and management of Roche Holding Ltd are responsible for establishing and maintaining adequate control over financial reporting. The internal control system was designed to provide reasonable assurance over the reliability of financial reporting and the preparation and fair presentation of consolidated financial statements in accordance with International Financial Reporting Standards.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective may not prevent or detect misstatements and can provide only reasonable assurance with respect to financial statement preparation and presentation. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of its system of internal control over financial reporting as of 31 December 2016 based on the criteria for effective internal control over financial reporting described in *Internal Control – Integrated Framework version 2013* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, management has concluded that the system of internal control over financial reporting was effective as of 31 December 2016.

The Statutory Auditor KPMG AG has audited the consolidated financial statements of Roche Holding Ltd for the year ended 31 December 2016, in accordance with Swiss Auditing Standards and with the International Standards on Auditing (ISA). They have also issued a report on the effectiveness of the Group's system of internal control over financial reporting. This report is set out on page 133.



Christoph Franz
Chairman of the Board of Directors

Alan Hippe
Chief Financial Officer

Basel, 24 January 2017

KPMG

Statutory Auditor's Report

To the General Meeting of Roche Holding Ltd, Basel

Report on the Audit of the Consolidated Financial Statements

Opinion

We have audited the consolidated financial statements of Roche Holding Ltd and its subsidiaries (the Group), which comprise the consolidated balance sheet as at 31 December 2016 and the consolidated income statement, consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion the consolidated financial statements (pages 38 to 123) give a true and fair view of the consolidated financial position of the Group as at 31 December 2016, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS) and comply with Swiss law.

Basis for Opinion

We conducted our audit in accordance with Swiss law, International Standards on Auditing (ISAs) and Swiss Auditing Standards. Our responsibilities under those provisions and Standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the provisions of Swiss law and the requirements of the Swiss audit profession, as well as the IESBA Code of Ethics for Professional Accountants, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

- **Charge-backs, other rebates and sales returns in the US pharmaceuticals business**
- **Carrying value of goodwill relating to the Diagnostics Division**
- **Carrying value of product-related intangible assets**
- **Provisions and contingent liabilities in respect of litigations**
- **Uncertain tax positions**

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

KPMG

Charge-backs, other rebates and sales returns in the US pharmaceuticals business

Key Audit Matter

The Group's pharmaceuticals business makes sales to various customers in the US that fall under certain commercial and government-mandated contracts, purchasing and reimbursement arrangements, of which the most significant are Medicaid and the 340B Drug Discount Program. The Group also provides a right of return to its US customers for certain products, with return periods that in some cases extend several years into the future. These arrangements result in deductions to gross amounts invoiced in arriving at revenue and create obligations for the Group to provide customers with charge-backs or other rebates and to give credit for sales returns. Unsettled amounts are estimated, deducted from gross sales and recorded as accrued liabilities (rebates) or provisions for sales returns, or as a deduction from accounts receivable (charge-backs). These estimates are based on analyses of existing contractual or legislatively mandated obligations, historical trends and the Group's experience.

Management have determined accrued liabilities and deductions to accounts receivable for expected charge-backs and other rebates, predominantly Medicaid, of CHF 795 million to be necessary at 31 December 2016. Additionally, provisions for sales returns mainly relating to products at or near loss of exclusivity of CHF 405 million have been recorded at 31 December 2016.

We focused on this area because the arrangements are complex and because establishing an appropriate year-end position requires significant judgement and estimation by management. The assumptions required for estimating provisions for sales returns are also made more complicated given the recent or impending loss of exclusivity in the US for some of the Group's pharmaceutical products.

Our response

Our audit procedures included, amongst others, the testing of the Group's key controls relating to the deductions made to gross sales for charge-backs, other rebates and sales returns, including those controls over accrual rates used within management's calculations for accrued liabilities, provisions or deductions from accounts receivable.

We obtained management's calculations for accrued liabilities, provisions and accounts receivable deductions, recalculated the amounts and validated the assumptions used by reference to internal and external sources including the terms of the applicable contracts, US government pricing information, historical charge-backs and other rebates, historical sales returns levels and to current trends.

We considered the accuracy of management's estimates in previous years by comparing historical accrued liabilities, provisions and accounts receivable deductions recorded to the actual amounts. We also assessed changes in the accrual rates used within the estimates for 2016, including responding to an increase in the utilisation of the 340B Drug Discount Program in 2016, by comparing the accrual rates to current charge-back, other rebate payment and sales return trends.

We considered the adequacy of the Group's revenue recognition accounting policies, including the recognition and measurement of deductions to gross sales relating to charge-backs, other rebates and sales returns and related disclosures.

For further information on charge-backs, other rebates and sales returns in the US pharmaceuticals business refer to the following:

Page 116 (Significant accounting policies, note 32), page 44 (General accounting principles – Key accounting judgements, estimates and assumptions, note 1) and pages 68 and 71 to 76 (financial disclosures, note 11 Accounts receivable, note 18 Other current liabilities and note 19 Provisions and contingent liabilities).

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Carrying value of goodwill relating to the Diagnostics Division

Key Audit Matter

The Group has goodwill of CHF 5,843 million arising from past acquisitions of the Diagnostics Division, principally Corange/Boehringer Mannheim, Ventana and several businesses in the sequencing business area. Goodwill is assessed for impairment at each reporting date and is additionally tested annually for impairment.

Impairment testing uses future cash flow projections based on the most recent business plans approved by management, including estimated sales volumes and pricing. The business plans are projected over five years, except for the sequencing business which is projected over ten years reflecting the long period required for the development of the technologies and products necessary to grow this business.

Management need to apply considerable judgement in allocating the goodwill to the appropriate businesses as well as in assessing the future performance and prospects of each cash-generating unit (CGU) and the discount rates to apply. Certain businesses face uncertainties in the technical and commercial viability of leading-edge next-generation technologies and products that are being developed.

We focused on this area in light of the amount of judgement and estimation required, the history of impairments recorded in previous years and the amounts of headroom for some CGUs.

Our response

Our audit procedures included, amongst others, testing the Group's key controls surrounding the carrying value of goodwill relating to the Diagnostics Division.

Our audit of goodwill included assessing the Group's budgeting procedures upon which the forecasts are based and the integrity of the discounted cash flow models which management used to prepare the valuations. We challenged the robustness of the key assumptions used to determine the recoverable amounts, including identification of and allocation to the CGU, forecast cash flows, growth rates and the discount rates based on our understanding of the commercial prospects of the Diagnostics businesses and the markets in which they operate.

We did this by using our own valuation specialists to assist us in evaluating the assumptions and methodologies used by management, in particular those relating to the discount rates, by comparing relevant assumptions to industry and economic forecasts. In addition, we identified and analysed changes in assumptions from prior periods, made an assessment of the consistency of assumptions, and performed a comparison of assumptions with publicly available data. We also performed a retrospective assessment of the accuracy of management's past projections by comparing historical forecasts to actual results.

Where the forecasts supporting the carrying value of the goodwill exceeded the usual period of five years, which was the case for the goodwill relating to the sequencing business, we challenged management on the reasons for this and made an assessment of management's ability to forecast cash flows over such longer periods with reasonable accuracy.

We also assessed whether the Group's disclosures about the sensitivity of the outcome of the impairment assessment to changes in key assumptions reflect the risks inherent in the valuation of goodwill.

For further information on the carrying value of goodwill relating to the Diagnostics Division refer to the following:

Page 116 (Significant accounting policies, note 32), page 44 (General accounting principles – Key accounting judgements, estimates and assumptions, note 1) and pages 63 to 64 (financial disclosures, note 8 Goodwill).

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Carrying value of product-related intangible assets

Key Audit Matter

The Group has significant product-related intangible assets (31 December 2016 – CHF 11,779 million) acquired through business combinations or in-licensing arrangements. These comprise product intangibles in use (CHF 8,460 million) being amortised and product intangibles not available for use (CHF 3,319 million) not being amortised. An impairment assessment is carried out for all product-related intangibles when there is evidence that an asset may be impaired, with intangible assets that are not yet available for use also being tested for impairment annually.

Product intangibles in use (CHF 8,460 million) predominantly relate to acquired products that have been launched, with the key risk being the ability to successfully commercialise the products concerned. The largest single intangible asset arose on the acquisition of InterMune in 2014 and relates to Esbriet (CHF 5,767 million). We focused on this area given that assessing the recoverability of product intangibles in use is based on forecasting and discounting future cash flows, which are inherently highly judgemental. Key estimates and assumptions include revenue growth, loss of exclusivity, profit margins, discount rates and the development and commercialisation of competing products.

Product intangibles not available for use (CHF 3,319 million) mostly represent in-process research and development assets. Due to the inherent uncertainties in the research and development processes, intangible assets not available for use are particularly at risk of impairment. The impairment assessment requires management to make key assumptions and judgements on the clinical, technical and commercial viability of the new products. Accordingly, we also focused our audit work on these areas. Risks include an inability to achieve successful trial results, obtain required clinical and/or regulatory approvals and a highly competitive business environment in the therapeutic areas where the Group has significant assets in research or development.

Our response

Our audit procedures included, amongst others, testing the Group's key controls surrounding the carrying value of product-related intangible assets.

Our audit of product-related intangible assets in use included assessing the Group's process and key controls for identifying triggering events. In circumstances where there was evidence that an asset may be impaired we challenged the robustness of the key assumptions used to determine the recoverable amounts, including forecast revenues, profit margins, useful lives and the discount rates. Our challenge was based on our understanding of the commercial prospects of the individual products, as well as the relevant business areas and markets in which they operate. We used our valuation specialists to assist us in evaluating the assumptions and methodologies used by management, in particular those relating to the discount rates. We made our own assessments in relation to key inputs such as projected pricing and volumes, the product's projected share of the therapeutic area or in vitro diagnostic market and profit margin, by comparing relevant assumptions to industry forecasts, reviewing analyst commentaries and by retrospective assessment of the accuracy of previous projections. Where we considered there to be a higher risk of impairment, we performed sensitivity analysis over individual intangible asset impairment models to assess the level of sensitivity to key assumptions so we could focus our work on those areas.

Regarding product-related intangibles not yet available for use, our audit in addition to the above procedures included assessing the reasonableness of management's assumptions regarding the probability of obtaining regulatory approval through comparison to industry practice, past history, and consideration of the Group's internal governance and approval processes. We also interviewed a number of senior research, development and commercial personnel in order to understand and challenge those assumptions.

For further information on the carrying value of product-related intangible assets refer to the following:

Page 116 (Significant accounting policies, note 32), page 44 (General accounting principles – Key accounting judgements, estimates and assumptions, note 1) and pages 65 to 67 (financial disclosures, note 9 Intangible assets).

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Provisions and contingent liabilities in respect of litigations

Key Audit Matter

The pharmaceuticals industry is heavily regulated which increases the inherent litigation risk. In the normal course of business, provisions and contingent liabilities may arise from product-specific and general legal proceedings, or from anti-trust and other government investigations. At 31 December 2016, the Group held provisions of CHF 705 million in respect of legal actions. Given the highly complex nature of regulatory and legal cases, management applies significant judgement when considering whether, and how much, to provide for the potential exposure of each matter. These estimates could change substantially over time as new facts emerge and each legal case progresses.

We focused on this area given the number, complexity and magnitude of potential exposures across the Group, and the judgement necessary to determine whether and what amounts to provide for and/or to disclose.

Our response

We discussed the status of significant known actual and potential litigation with in-house legal counsel, other management and directors who have knowledge of these matters. We challenged the decisions and rationale for provisions held or for decisions not to record provisions or make disclosures. For the most significant of the matters, we assessed relevant historical and recent judgments passed by the court authorities and considered legal opinion obtained by management from external lawyers to challenge the basis used for the provisions recorded and the disclosures made by the Group.

We used our own forensic and compliance specialists to assist with our assessment of the Group's internal audit reports and compliance logs and reports prepared by management to identify actual and potential non-compliance with laws and regulations, both those specific to the Group's business and those relating to the conduct of business generally.

For those matters where management concluded that no provisions should be recorded, we also considered the adequacy and completeness of the Group's disclosures made in relation to contingent liabilities.

For further information on provisions and contingent liabilities in respect of litigations refer to the following:

Page 116 (Significant accounting policies, note 32), page 44 (General accounting principles – Key accounting judgements, estimates and assumptions, note 1) and page 72 (financial disclosures, note 19 Provisions and contingent liabilities).

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Uncertain tax positions

Key Audit Matter

The Group operates across a wide range of different tax jurisdictions around the world and is thus subject to occasional challenges by local tax authorities including cross-border transfer pricing arrangements for goods and services, financing and transaction-related tax matters in connection with the integration of investments, divestments and licensing contracts. Areas of particular focus include transfer pricing arrangements such as those relating to the Group's manufacturing and supply chain.

Where the amount of tax liabilities is uncertain, the Group recognises accruals that reflect management's best estimate of the outcome based on the facts known in the relevant jurisdiction. The Group has open tax and transfer pricing matters with various tax authorities where the range of possible outcomes is broad. At 31 December 2016, the Group has recognised current income tax liabilities of CHF 2,713 million which includes accruals for uncertain tax positions.

We focused on this area as the estimates of the amounts of tax receivable or payable require a significant level of expertise and judgement.

Our response

We challenged management's judgement regarding the eventual resolution with national tax authorities of double taxation conflicts, pending tax audits and estimates of tax exposures with the assistance of our local country tax specialists. For the most significant uncertain tax positions, our work included the assessment of third-party opinions and the use, where available, of past experience with the tax authorities in the respective jurisdiction. Additionally we used our own tax specialists' expertise to assess the appropriateness of the key assumptions made by management and to conclude on a best estimate of the outcome.

Our audit approach included additional audit procedures performed at Group level to consider the more significant uncertain tax positions in particular for transfer prices applied for goods and services and intellectual property rights.

For further information on uncertain tax positions refer to the following:

Page 116 (Significant accounting policies, note 32), page 44 (General accounting principles – Key accounting judgements, estimates and assumptions, note 1) and pages 51 to 53 (financial disclosures, note 4 Income taxes).

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Other Information in the Annual Report

The Board of Directors is responsible for the other information in the annual report. The other information comprises all information included in the annual report, but does not include the consolidated financial statements, the stand-alone financial statements of the company, the remuneration report and our auditor's reports thereon.

Our opinion on the consolidated financial statements does not cover the other information in the annual report and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information in the annual report and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibility of the Board of Directors for the Consolidated Financial Statements

The Board of Directors is responsible for the preparation of consolidated financial statements that give a true and fair view in accordance with IFRS and the provisions of Swiss law, and for such internal control as the Board of Directors determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the Board of Directors is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board of Directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law, ISAs and Swiss Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Swiss law, ISAs and Swiss Auditing Standards, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

— Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

— Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances.

— Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made.

— Conclude on the appropriateness of the Board of Directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

KPMG

— Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

— Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

We communicate with the Board of Directors or its relevant committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Board of Directors or its relevant committee with a statement that we have complied with relevant ethical requirements regarding independence, and communicate to them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

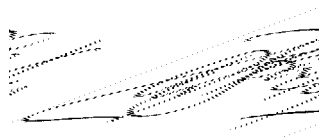
From the matters communicated with the Board of Directors or its relevant committee, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report, unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Report on Other Legal and Regulatory Requirements

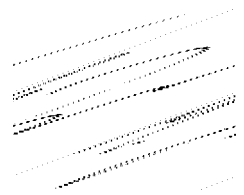
In accordance with article 728a para. 1 item 3 CO and the Swiss Auditing Standard 890, we confirm that an internal control system exists, which has been designed for the preparation of consolidated financial statements according to the instructions of the Board of Directors.

We recommend that the consolidated financial statements submitted to you be approved.

KPMG AG



Ian Starkey
Licensed Audit Expert
Auditor in Charge



Marc Ziegler
Licensed Audit Expert

Basel, 24 January 2017

KPMG

Report of the Independent Auditor on Internal Control over Financial Reporting

To the Board of Directors of Roche Holding Ltd, Basel

We have examined the Roche Group's system of internal control over financial reporting as of 31 December 2016, based on criteria established in *Internal Control – Integrated Framework version 2013* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

The Board of Directors and management of Roche Holding Ltd are responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting as included in the accompanying Report of Roche Management on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Group's internal control over financial reporting based on our examination. An entity's internal control over financial reporting is a process effected by the entity's Board of Directors, management, and other personnel, designed to provide reasonable assurance regarding the reliability of financial statements prepared in accordance with International Financial Reporting Standards (IFRS) and includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the entity; (2) provide reasonable assurance that transactions are recorded as necessary to permit the preparation of financial statements in accordance with the applicable financial reporting framework; and (3) provide reasonable assurance regarding the prevention or timely detection of the unauthorised acquisition, use, or disposition of the entity's assets that could have a material effect on the entity's financial statements.

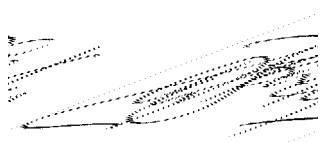
We conducted our examination in accordance with the International Standard on Assurance Engagements 3000 (ISAE 3000). This Standard requires that we plan and perform our examination to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our examination included obtaining an understanding of internal control over financial reporting, testing and evaluating the design and operating effectiveness of internal control, and performing such other procedures as we considered necessary in the circumstances. We believe that the evidence obtained from our examination provides a reasonable basis for our opinion.

Because of the inherent limitations of internal control over financial reporting, including the possibility of management override of controls, misstatements due to error or fraud may occur and not be detected. Also, projections of any evaluation of internal control over financial reporting to future periods are subject to the risk that internal control may become inadequate because of changes in conditions or because the degree of compliance with the policies or procedures may deteriorate.

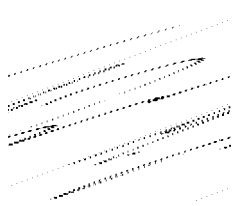
In our opinion, the Roche Group maintained, in all material respects, effective internal control over financial reporting as of 31 December 2016 based on criteria established in *Internal Control – Integrated Framework version 2013* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

We also have audited, in accordance with Swiss Auditing Standards and International Standards on Auditing (ISA), the consolidated financial statements of Roche Holding Ltd for the year ended 31 December 2016 and our report dated 24 January 2017 expressed an unqualified opinion on those consolidated financial statements.

KPMG AG



Ian Starkey
Licensed Audit Expert
Auditor in Charge



Marc Ziegler
Licensed Audit Expert

Basel, 24 January 2017

Multi-Year Overview and Supplementary Information

Multi-Year Overview

Statistics, as reported

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Income statement in millions of CHF										
Sales	46,133	45,617	49,051	47,473	42,531	45,499	46,780	47,462	48,145	50,576
EBITDA	17,068	16,637	18,028	18,517	16,933	19,040	19,802	19,558	19,479	20,483
Operating profit	14,468	13,924	12,277	13,486	13,454	14,125	16,376	14,090	13,821	14,069
Net income attributable to Roche shareholders	9,761	8,969	7,784	8,666	9,343	9,539	11,164	9,332	8,863	9,576
Research and development	8,385	8,845	9,874	10,026	8,326	9,552	9,270	9,895	9,581	11,532
Balance sheet in millions of CHF										
Non-current assets	35,349	37,485	36,086	33,408	33,344	33,434	33,003	44,426	47,581	48,149
Current assets	42,834	38,604	38,479	27,612	28,232	31,371	29,164	31,114	28,182	28,670
Total assets	78,183	76,089	74,565	61,020	61,576	64,805	62,167	75,540	75,763	76,819
Non-current liabilities	(10,422)	(10,163)	(43,084)	(34,380)	(30,884)	(27,868)	(25,166)	(30,874)	(28,695)	(27,817)
Current liabilities	(14,454)	(12,104)	(22,067)	(14,978)	(16,210)	(20,209)	(15,760)	(23,108)	(23,768)	(22,600)
Total liabilities	(24,876)	(22,267)	(65,151)	(49,358)	(47,094)	(48,077)	(40,926)	(53,982)	(52,463)	(50,417)
Net assets	53,307	53,822	9,414	11,662	14,482	16,728	21,241	21,558	23,300	26,402
Capital and reserves attributable to Roche shareholders	45,347	44,479	7,366	9,469	12,095	14,494	19,294	19,586	20,979	23,911
Equity attributable to non-controlling interests	7,960	9,343	2,048	2,193	2,387	2,234	1,947	1,972	2,321	2,491
Additions to property, plant and equipment	3,648	3,187	2,837	2,633	2,006	2,130	2,458	2,905	4,077	3,790
Personnel										
Number of employees at end of year	78,604	80,080	81,507	80,653	80,129	82,089	85,080	88,509	91,747	94,052
Key ratios										
Net income attributable to Roche shareholders as % of sales	21	20	16	18	22	21	24	20	18	19
Net income attributable to Roche shareholders as % of equity	22	20	106	92	77	66	58	48	42	40
Research and development as % of sales	18	19	20	21	20	21	20	21	20	23
Current ratio %	296	319	174	184	174	155	185	135	119	127
Equity and non-controlling interests as % of total assets	68	71	13	19	24	26	34	29	31	34
Human capital return on investment ratio	2.34	2.25	2.02	2.13	2.31	2.25	2.45	2.16	2.06	2.06
Data on shares and non-voting equity securities										
Number of shares	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000
Number of non-voting equity securities *(Genussscheine)*	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700
Total shares and non-voting equity securities	862,562,700	862,562,700	862,562,700	862,562,700	862,562,700	862,562,700	862,562,700	862,562,700	862,562,700	862,562,700
Total dividend in millions of CHF	3,968	4,313	5,175	5,693	5,865	6,340	6,728	6,901	6,987	7,073[a]
Earnings per share and non-voting equity security (diluted) in CHF	11.16	10.23	9.02	10.11	10.98	11.16	12.93	10.81	10.28	11.13
Dividend per share and non-voting equity security in CHF	4.60	5.00	6.00	6.60	6.80	7.35	7.80	8.00	8.10	8.20[a]

Information in this table is stated as reported and changes in accounting policies arising from changes in International Financial Reporting Standards are not applied retrospectively.

a) 2016 dividend proposed by the Board of Directors.

Sales by Division in millions of CHF

	2012	2013	2014	2015	2016
Pharmaceuticals	35,232	36,304	36,696	37,331	39,103
Diagnostics	10,267	10,476	10,766	10,814	11,473
Total	**45,499**	**46,780**	**47,462**	**48,145**	**50,576**

Sales by geographical area in millions of CHF

	2012	2013	2014	2015	2016
Switzerland	505	526	526	497	577
Germany	2,534	2,729	2,900	2,734	3,004
Rest of Europe	11,308	11,341	11,119	10,046	10,264
Europe	**14,347**	**14,596**	**14,545**	**13,277**	**13,845**
United States	15,932	17,169	18,041	20,164	21,192
Rest of North America	1,035	1,042	962	855	851
North America	**16,967**	**18,211**	**19,003**	**21,019**	**22,043**
Latin America	3,410	3,363	3,285	2,832	2,681
Japan	4,735	3,936	3,755	3,648	4,211
Rest of Asia	4,368	5,129	5,327	6,006	6,461
Asia	**9,103**	**9,065**	**9,082**	**9,654**	**10,672**
Africa, Australia and Oceania	1,672	1,545	1,547	1,363	1,335
Total	**45,499**	**46,780**	**47,462**	**48,145**	**50,576**

Additions to property, plant and equipment by division in millions of CHF

	2012	2013	2014	2015	2016
Pharmaceuticals	1,049	1,294	1,674	2,706	2,154
Diagnostics	1,079	1,158	1,228	1,363	1,629
Corporate	2	6	3	8	7
Total	**2,130**	**2,458**	**2,905**	**4,077**	**3,790**

Additions to property, plant and equipment by geographical area in millions of CHF

	2012	2013	2014	2015	2016
Switzerland	398	487	691	964	892
Germany	318	456	527	602	759
Rest of Europe	371	317	335	349	315
Europe	**1,087**	**1,260**	**1,553**	**1,915**	**1,966**
United States	411	515	683	1,382	1,060
Rest of North America	8	51	6	4	7
North America	**419**	**566**	**689**	**1,386**	**1,067**
Latin America	135	104	113	132	133
Japan	186	137	154	230	192
Rest of Asia	270	362	371	379	387
Asia	**456**	**499**	**525**	**609**	**579**
Africa, Australia and Oceania	33	29	25	35	45
Total	**2,130**	**2,458**	**2,905**	**4,077**	**3,790**

Alternative Performance Measures

The financial information included in the Financial Review includes certain Alternative Performance Measures (APMs) which are not accounting measures as defined by IFRS, in particular, the core results, net working capital, net operating assets, free cash flow and constant exchange rates. These APMs should not be used instead of, or considered as alternatives to, the Group's consolidated financial results based on IFRS. These APMs may not be comparable to similarly titled measures disclosed by other companies. All APMs presented in the Financial Review relate to the performance of the current year and comparative periods.

Core results

Core results allow for an assessment of both the Group's actual results as defined by IFRS and the underlying performance of the business. The core results concept, which is used in the internal management of the business, is based on the IFRS results, with the following adjustments:

- Global restructuring plans (see Note 6) are excluded.
- Amortisation and impairment of intangible assets (see Note 9) and impairment of goodwill (see Note 8) are excluded.
- Acquisition accounting and other impacts from the accounting for alliance arrangements and business combinations (see Financial Review) are excluded.
- Discontinued operations (currently none) would be excluded.
- Legal and environmental cases (see Financial Review) are excluded.
- Global issues outside the healthcare sector beyond the Group's control (currently none) would be excluded.
- Material treasury items such as major debt restructurings (see Note 20) are excluded.
- Pension plan settlements (see Note 25) are excluded.
- The tax benefit recorded under IFRS in respect of Equity Compensation Plans (ECPs), which varies according to the price of the underlying equity, is replaced by a normalised tax benefit, being the IFRS 2 expense multiplied by the applicable tax rate (see Note 4).

The core results concept was further described on 22 October 2010 at an Investor Update teleconference, which is available for download at: http://www.roche.com/investors/ir_agenda/csr_151010.htm

The Group's IFRS results, including the divisional breakdown, are reconciled to the core results in the tables below. The calculation of Core EPS is also given in the tables below. Additional commentary to the adjustment items is given in the Financial Review.

Core results reconciliation – 2016 in millions of CHF

	IFRS	Global restructuring	Intangibles amortisation	Intangibles impairment	Alliances & business combinations	Legal & environmental	Major debt restructuring	Pension plan settlements	Normalisation of ECP tax benefit	Core
Sales	50,576	–	–	–	–	–	–	–	–	50,576
Royalties and other operating income	2,060	–	–	–	–	–	–	–	–	2,060
Cost of sales	(16,180)	837	1,637	70	167	–	–	–	–	(13,469)
Marketing and distribution	(9,140)	128	5	–	–	–	–	–	–	(9,007)
Research and development	(11,532)	133	141	1,343	–	–	–	–	–	(9,915)
General and administration	(1,715)	135	–	95	(401)	77	–	(16)	–	(1,825)
Operating profit	**14,069**	**1,233**	**1,783**	**1,508**	**(234)**	**77**	**–**	**(16)**	**–**	**18,420**
Financing costs	(1,099)	2	–	–	53	10	–	–	–	(1,034)
Other financial income (expense)	37	–	–	–	–	–	–	–	–	37
Profit before taxes	**13,007**	**1,235**	**1,783**	**1,508**	**(181)**	**87**	**–**	**(16)**	**–**	**17,423**
Income taxes	(3,274)	(270)	(871)	(362)	(41)	(30)	–	5	108	(4,735)
Net income	**9,733**	**965**	**912**	**1,146**	**(222)**	**57**	**–**	**(11)**	**108**	**12,688**
Attributable to										
– Roche shareholders	9,576	961	897	1,141	(222)	57	–	(11)	108	12,507
– Non-controlling interests	157	4	15	5	–	–	–	–	–	181

Core results reconciliation – 2015 in millions of CHF

	IFRS	Global restructuring	Intangibles amortisation	Intangibles impairment	Alliances & business combinations	Legal & environmental	Major debt restructuring	Pension plan settlements	Normalisation of ECP tax benefit	Core
Sales	48,145	–	–	–	–	–	–	–	–	48,145
Royalties and other operating income	2,258	–	–	–	–	–	–	–	–	2,258
Cost of sales	(15,460)	654	1,548	–	552	–	–	–	–	(12,706)
Marketing and distribution	(8,814)	203	1	–	–	–	–	–	–	(8,610)
Research and development	(9,581)	57	123	69	–	–	–	–	–	(9,332)
General and administration	(2,727)	148	–	–	201	170	–	(5)	–	(2,213)
Operating profit	**13,821**	**1,062**	**1,672**	**69**	**753**	**170**	**–**	**(5)**	**–**	**17,542**
Financing costs	(1,574)	1	–	–	40	12	381	–	–	(1,140)
Other financial income (expense)	(260)	–	–	–	(16)	–	–	–	–	(276)
Profit before taxes	**11,987**	**1,063**	**1,672**	**69**	**777**	**182**	**381**	**(5)**	**–**	**16,126**
Income taxes	(2,931)	(195)	(818)	(20)	(183)	(40)	(133)	1	30	(4,289)
Net income	**9,056**	**868**	**854**	**49**	**594**	**142**	**248**	**(4)**	**30**	**11,837**
Attributable to										
– Roche shareholders	8,863	863	845	47	594	141	248	(4)	29	11,626
– Non-controlling interests	193	5	9	2	–	1	–	–	1	211

Divisional core results reconciliation – 2016 in millions of CHF

	IFRS	Global restructuring	Intangibles amortisation	Intangibles impairment	Alliances & business combinations	Legal & environmental	Pension plan settlements	Core
Pharmaceuticals								
Sales	39,103	–	–	–	–	–	–	39,103
Royalties and other operating income	1,944	–	–	–	–	–	–	1,944
Cost of sales	(10,393)	737	1,314	–	167	–	–	(8,175)
Marketing and distribution	(6,391)	26	3	–	–	–	–	(6,362)
Research and development	(10,156)	90	135	1,343	–	–	–	(8,588)
General and administration	(822)	82	–	95	(376)	18	(10)	(1,013)
Operating profit	**13,285**	**935**	**1,452**	**1,438**	**(209)**	**18**	**(10)**	**16,909**
Diagnostics								
Sales	11,473	–	–	–	–	–	–	11,473
Royalties and other operating income	116	–	–	–	–	–	–	116
Cost of sales	(5,787)	100	323	70	–	–	–	(5,294)
Marketing and distribution	(2,749)	102	2	–	–	–	–	(2,645)
Research and development	(1,376)	43	6	–	–	–	–	(1,327)
General and administration	(464)	66	–	–	(26)	28	(6)	(402)
Operating profit	**1,213**	**311**	**331**	**70**	**(26)**	**28**	**(6)**	**1,921**
Corporate								
General and administration	(429)	(13)	–	–	1	31	–	(410)
Operating profit	**(429)**	**(13)**	**–**	**–**	**1**	**31**	**–**	**(410)**

Divisional core results reconciliation – 2015 in millions of CHF

	IFRS	Global restructuring	Intangibles amortisation	Intangibles impairment	Alliances & business combinations	Legal & environmental	Pension plan settlements	Core
Pharmaceuticals								
Sales	37,331	–	–	–	–	–	–	37,331
Royalties and other operating income	2,119	–	–	–	–	–	–	2,119
Cost of sales	(10,249)	558	1,239	–	552	–	–	(7,900)
Marketing and distribution	(6,154)	87	1	–	–	–	–	(6,066)
Research and development	(8,367)	46	118	69	–	–	–	(8,134)
General and administration	(1,677)	65	–	–	162	158	(3)	(1,295)
Operating profit	**13,003**	**756**	**1,358**	**69**	**714**	**158**	**(3)**	**16,055**
Diagnostics								
Sales	10,814	–	–	–	–	–	–	10,814
Royalties and other operating income	139	–	–	–	–	–	–	139
Cost of sales	(5,211)	96	309	–	–	–	–	(4,806)
Marketing and distribution	(2,660)	116	–	–	–	–	–	(2,544)
Research and development	(1,214)	11	5	–	–	–	–	(1,198)
General and administration	(579)	77	–	–	39	7	(2)	(458)
Operating profit	**1,289**	**300**	**314**	**–**	**39**	**7**	**(2)**	**1,947**
Corporate								
General and administration	(471)	6	–	–	–	5	–	(460)
Operating profit	**(471)**	**6**	**–**	**–**	**–**	**5**	**–**	**(460)**

Core EPS (basic)

	2016	2015
Core net income attributable to Roche shareholders (CHF millions)	12,507	11,626
Weighted average number of shares and non-voting equity securities in issue (millions) [27]	852	851
Core earnings per share (basic) (CHF)	**14.68**	**13.66**

Core EPS (diluted)

	2016	2015
Core net income attributable to Roche shareholders (CHF millions)	12,507	11,626
Increase in non-controlling interests' share of core net income, assuming all outstanding Chugai stock options exercised (CHF millions)	(1)	(1)
Net income used to calculate diluted earnings per share (CHF millions)	**12,506**	**11,625**
Weighted average number of shares and non-voting equity securities in issue used to calculate diluted earnings per share (millions) [27]	**860**	**862**
Core earnings per share (diluted) (CHF)	**14.53**	**13.49**

Free cash flow

Free cash flow is used to assess the Group's ability to generate the cash required to conduct and maintain its operations. It also indicates the Group's ability to generate cash to finance dividend payments, repay debt and to undertake merger and acquisition activities. The free cash flow concept is used in the internal management of the business.

Operating free cash flow is calculated based on the IFRS operating profit and adjusted for certain cash items, movements in net working capital and capital expenditures (investments in property, plant and equipment and intangible assets). Operating free cash flow is different from cash flows from operating activities as defined by IAS 7 in that it includes capital expenditures (which is within the responsibility of divisional management) and excludes income taxes paid (which is not within the responsibility of divisional management). Cash outflows from defined benefit plans are allocated to the operating free cash flow based on the current service cost with the residual allocated to treasury activities.

Free cash flow is calculated as the operating free cash flow adjusted for treasury activities and taxes paid. Free cash flow is different from total cash flows as defined by IAS 7 in that it excludes dividend payments, cash inflows/outflow from financing activities such as issuance/repayment of debt, purchase/sale of marketable securities and cash inflows/outflows from mergers, acquisitions and divestments.

The Group refined the calculation of free cash flow in 2016 to exclude dividends, in line with its peer group. The free cash flow for 2015 has been restated accordingly, resulting in an increase of CHF 6,954 million to the free cash flow for that period. There was no impact on the operating free cash flow from this change.

Operating free cash flow and free cash flow are calculated as shown in the tables below. Additional commentary to the adjustment items is given in the Financial Review.

Operating free cash flow reconciliation in millions of CHF

	2016	2015
Cash flows from operating activities (IFRS basis in accordance with IAS 7)	**15,001**	**15,251**
Add back		
– Income taxes paid	3,738	3,696
Deduct		
– Investments in property, plant and equipment	(4,144)	(3,468)
– Investments in intangible assets	(1,001)	(642)
– Disposal of property, plant and equipment	151	45
– Disposal of intangible assets	–	–
Pensions and other post-employment benefits		
– Add back total payments for defined benefit plans	880	538
– Deduct allocation of payments to operating free cash flow	(539)	(518)
Other operating items	–	(30)
Operating free cash flow	**14,086**	**14,872**

Free cash flow reconciliation in millions of CHF

	2016	2015
Cash flows from operating activities (IFRS basis in accordance with IAS 7)	**15,001**	**15,251**
Deduct		
– Investments in property, plant and equipment	(4,144)	(3,468)
– Investments in intangible assets	(1,001)	(642)
– Disposal of property, plant and equipment	151	45
– Disposal of intangible assets	–	–
– Interest paid	(849)	(967)
Other operating items	–	(30)
Other treasury items	(28)	117
Free cash flow	**9,130**	**10,306**

Supplementary information used to calculate the divisional operating free cash flow is shown in the table below.

Divisional operating free cash flow information in millions of CHF

	Pharmaceuticals		Diagnostics		Corporate		Group	
	2016	2015	2016	2015	2016	2015	2016	2015
Depreciation, amortisation and impairment								
Depreciation of property, plant and equipment	1,212	1,098	938	863	8	7	2,158	1,968
Amortisation of intangible assets	1,452	1,358	331	314	–	–	1,783	1,672
Impairment of property, plant and equipment	256	180	35	11	–	–	291	191
Impairment of goodwill	95	–	–	–	–	–	95	–
Impairment of intangible assets	1,343	69	70	–	–	–	1,413	69
Total	**4,358**	**2,705**	**1,374**	**1,188**	**8**	**7**	**5,740**	**3,900**
Other adjustments								
Add back								
– Expenses for equity-settled equity compensation plans	371	323	69	53	33	27	473	403
– Net (income) expense for provisions	(85)	788	145	183	60	7	120	978
– Net (gain) loss from disposals	(155)	(29)	5	7	(60)	–	(210)	(22)
– Non-cash working capital and other items	485	976	47	76	(38)	1	494	1,053
Deduct								
– Utilisation of provisions	(504)	(539)	(107)	(151)	(151)	(145)	(762)	(835)
– Proceeds from disposals	189	90	43	25	98	–	330	115
Total	**301**	**1,609**	**202**	**193**	**(58)**	**(110)**	**445**	**1,692**
Operating profit cash adjustments	**4,659**	**4,314**	**1,576**	**1,381**	**(50)**	**(103)**	**6,185**	**5,592**

EBITDA

The Group does not use Earnings Before Interest Tax Depreciation and Amortisation (EBITDA) in either its internal management reporting or its external communications. In the opinion of the Group's management, operating free cash flow gives a more useful and consistent measurement of 'cash earnings' than EBITDA, which includes many non-cash items such as provisions, allowances for trade receivables and inventories, and certain non-cash entries arising from acquisition accounting and pension accounting.

For the convenience of those readers that do use EBITDA, this is provided in the table below. As the starting point this uses the core results, which already exclude the amortisation and impairment of goodwill and intangible assets.

EBITDA (using core results) in millions of CHF

	Pharmaceuticals		Diagnostics		Corporate		Group	
	2016	2015	2016	2015	2016	2015	2016	2015
EBITDA								
Core operating profit	16,909	16,055	1,921	1,947	(410)	(460)	18,420	17,542
Depreciation and impairment of property, plant and equipment – Core basis	1,112	1,066	943	864	8	7	2,063	1,937
EBITDA	**18,021**	**17,121**	**2,864**	**2,811**	**(402)**	**(453)**	**20,483**	**19,479**
– margin, % of sales	46.1	45.9	25.0	26.0	–	–	40.5	40.5

Net operating assets

Net operating assets allow for an assessment of the Group's operating performance of the business independently from financing and tax activities. Net operating assets are calculated as property, plant and equipment, goodwill, intangible assets, net working capital and long-term net operating assets minus provisions.

The calculation of the net operating assets disclosed in Note 2 of the Annual Financial Statements is shown in the tables below.

Net operating assets reconciliation – 2016 in millions of CHF

	Pharmaceuticals	Diagnostics	Corporate	Taxation and Treasury	Roche Group
Property, plant and equipment	13,944	5,873	140	–	19,957
Goodwill	5,439	5,843	–	–	11,282
Intangible assets	9,430	2,616	–	–	12,046
Inventories	5,634	2,294	–	–	7,928
Provisions	(2,751)	(950)	(347)	–	(4,048)
Current income tax net liabilities	–	–	–	(2,378)	(2,378)
Deferred tax net assets	–	–	–	1,988	1,988
Defined benefit plan net liabilities	–	–	–	(6,940)	(6,940)
Marketable securities	–	–	–	4,944	4,944
Cash and cash equivalents	–	–	–	4,163	4,163
Debt	–	–	–	(22,355)	(22,355)
Other net assets (liabilities)					
– Net working capital	(1,052)	502	(104)	–	(654)
– Long-term net operating assets	112	10	(6)	–	116
– Other	–	–	–	353	353
Total net operating assets	**30,756**	**16,188**	**(317)**	**(20,225)**	**26,402**

Net operating assets reconciliation – 2015 in millions of CHF

	Pharmaceuticals	Diagnostics	Corporate	Taxation and Treasury	Roche Group
Property, plant and equipment	13,082	5,250	141	–	18,473
Goodwill	5,365	5,717	–	–	11,082
Intangible assets	10,955	2,906	–	–	13,861
Inventories	5,655	1,993	–	–	7,648
Provisions	(3,298)	(947)	(391)	–	(4,636)
Current income tax net liabilities	–	–	–	(2,542)	(2,542)
Deferred tax net assets	–	–	–	2,019	2,019
Defined benefit plan net liabilities	–	–	–	(7,699)	(7,699)
Marketable securities	–	–	–	5,440	5,440
Cash and cash equivalents	–	–	–	3,731	3,731
Debt	–	–	–	(23,251)	(23,251)
Other net assets (liabilities)					
– Net working capital	(1,218)	540	(108)	–	(786)
– Long-term net operating assets	75	(27)	(8)	–	40
– Other	–	–	–	(80)	(80)
Total net operating assets	**30,616**	**15,432**	**(366)**	**(22,382)**	**23,300**

Net debt

Net debt is used to monitor the Group's overall short- and long-term liquidity. Net debt is calculated as the sum of total debt (long-term and short-term) less marketable securities, cash and cash equivalents.

Net debt calculations, including details of movements during the current year, are shown in the table on page 31 in the Financial Review.

Net working capital

Net working capital is used to assess the Group's efficiency in utilising assets and short-term liquidity. Net trade working capital iscalculated as trade receivables and inventories minus trade payables. Net working capital is calculated as net trade working capital adjusted for other receivables and other payables.

Net working capital and net trade working capital calculations are shown in the tables on page 18 (Pharmaceuticals Division), page 24 (Diagnostics Division) and page 26 (Corporate) in the Financial Review.

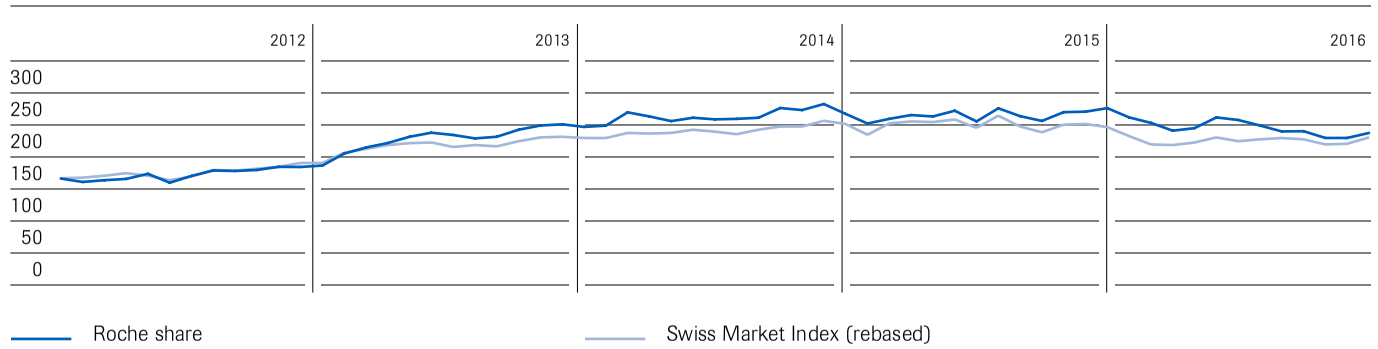
Constant exchange rates

Certain percentage changes in the Financial Review have been calculated using constant exchange rates (CER) which allow for an assessment of the Group's financial performance with the effects of exchange rate fluctuations eliminated. The percentage changes at constant exchange rates are calculated using simulations by reconsolidating both the current reported period and the prior period numbers at constant currency exchange rates, equalling the average exchange rates for the prior year. For example, a CER change between a 2016 line item and its 2015 equivalent is calculated using the average exchange rate for the year ended 31 December 2015 for both the 2016 line item and the 2015 line item and subsequently calculating the change in percent with respect to the two recalculated numbers.

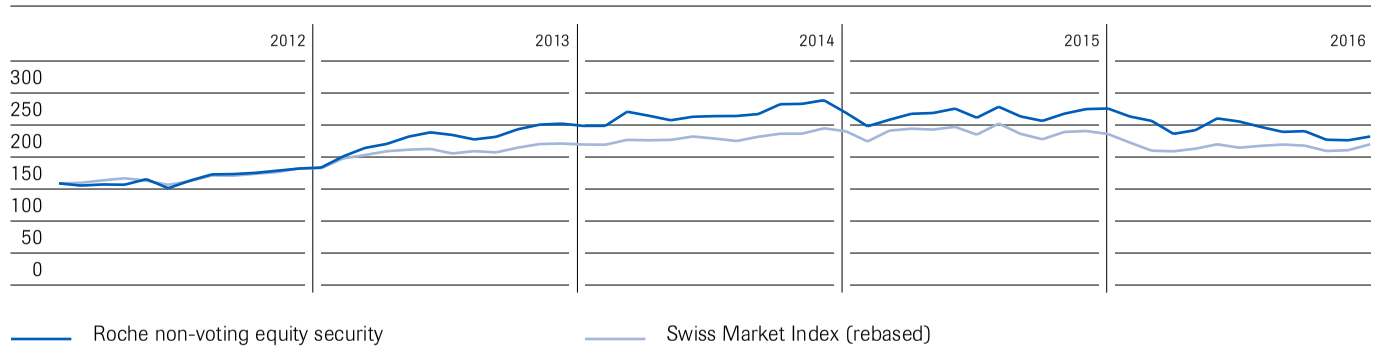
Foreign exchange gains and losses are excluded from the calculation of CER growth rates in the earning per share calculations. In countries where there is a significant devaluation in the local currency in the current year, the simulations use the average exchange rate of the current year instead of the prior year to avoid that CER growth rates are artificially inflated.

Roche Securities

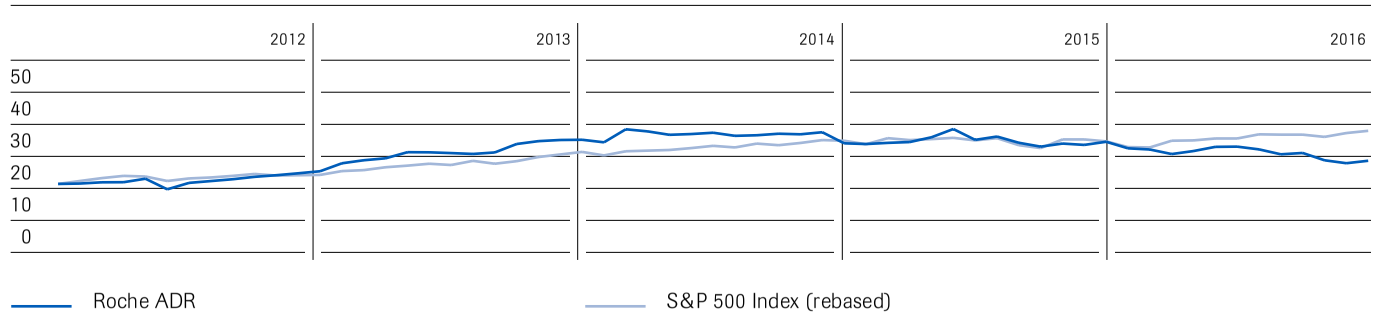
Price development of share in CHF



Price development of non-voting equity security *(Genussschein)* in CHF



Price development of American Depositary Receipt (ADR) in USD



Eight Roche American Depositary Receipts (ADRs) are equivalent to one non-voting equity security *(Genussschein)*. ADRs have been traded in the US over-the-counter market since July 1992.
Information in these tables is restated for the change in the ratio for the ADRs from 1:1 to 2:1 effective 24 January 2005, the change in the ratio for the ADRs from 2:1 to 4:1 effective 9 January 2009 and the change in the ratio for the ADRs from 4:1 to 8:1 effective 27 February 2014.

Number of shares and non-voting equity securities[a]

	2012	2013	2014	2015	2016
Number of shares (nominal value: CHF 1.00)	160,000,000	160,000,000	160,000,000	160,000,000	160,000,000
Number of non-voting equity securities *(Genussscheine)* (no nominal value)	702,562,700	702,562,700	702,562,700	702,562,700	702,562,700
Total	**862,562,700**	**862,562,700**	**862,562,700**	**862,562,700**	**862,562,700**
Number of own shares and non-voting equity securities *(Genussscheine)* held	(14,093,890)	(13,537,704)	(12,819,364)	(10,542,434)	(10,635,070)
Total in issue	**848,468,810**	**849,024,996**	**849,743,336**	**852,020,266**	**851,927,630**

Data per share and non-voting equity security in CHF

		2012	2013	2014	2015	2016
Earnings (basic)		11.12	13.16	10.99	10.42	11.24
Earnings (diluted)		11.03	12.93	10.81	10.28	11.13
Core earnings (basic)		13.60	14.52	14.53	13.66	14.68
Core earnings (diluted)		13.49	14.27	14.29	13.49	14.53
Equity attributable to Roche shareholders		17.08	22.73	23.05	24.62	28.07
Dividend		7.35	7.80	8.00	8.10	8.20[c]
Stock price of share[b]	Opening	166.60	186.90	247.40	267.75	276.75
	High	191.70	258.50	289.00	284.50	276.75
	Low	157.10	186.90	239.40	244.40	223.50
	Year-end	186.90	247.40	267.75	276.75	238.00
Stock price of non-voting equity security *(Genussschein)*[b]	Opening	159.20	184.00	249.20	269.90	276.40
	High	188.60	258.50	294.60	286.20	276.40
	Low	149.20	184.00	239.00	241.70	220.10
	Year-end	184.00	249.20	269.90	276.40	232.60

Market capitalisation in millions of CHF

	2012	2013	2014	2015	2016
Year-end	156,582	211,291	229,003	235,554	199,022

Key ratios (year-end)

	2012	2013	2014	2015	2016
Dividend yield of shares in %	3.9	3.2	3.0	2.9	3.4
Dividend yield of non-voting equity securities *(Genussscheine)* in %	4.0	3.1	3.0	2.9	3.5
Price/earnings of shares	17	19	25	27	21
Price/earnings of non-voting equity securities *(Genussscheine)*	16	19	25	27	21

a) Each non-voting equity security *(Genussschein)* confers the same rights as any of the shares to participate in the available earnings and any remaining proceeds from liquidation following repayment of the nominal value of the shares and the participation certificate capital (if any). Shares and non-voting equity securities are listed on the SIX Swiss Exchange. Roche Holding Ltd has no restrictions as to ownership of its shares or non-voting equity securities.
b) All stock price data reflect daily closing prices.
c) 2016 dividend proposed by the Board of Directors.

Ticker symbols

	Share	Non-voting equity security	American Depositary Receipt (ADR)
SIX Swiss Exchange	RO	ROG	–
Bloomberg	RO SW	ROG VX	RHHBY US
Reuters	RO.S	ROG.VX	RHHBY.PK

Roche Holding Ltd, Basel

Financial Statements

Balance sheet in millions of CHF

	31 December 2016	31 December 2015
Current assets		
Cash and cash equivalents	1,294	1,077
Marketable securities	823	811
Accounts receivable from Group companies	2,510	4,183
Short-term loans to Group companies	2,500	1,000
Other current receivables	1	1
Total current assets	**7,128**	**7,072**
Non-current assets		
Long-term loans to Group companies	652	621
Investments	8,852	8,850
Total non-current assets	**9,504**	**9,471**
Total assets	**16,632**	**16,543**
Short-term liabilities		
Accounts payable to Group companies	14	17
Other short-term liabilities	20	24
Total short-term liabilities	**34**	**41**
Long-term liabilities		
Provisions	35	35
Total long-term liabilities	**35**	**35**
Total liabilities	**69**	**76**
Shareholders' equity		
Share capital	160	160
Non-voting equity securities *(Genussscheine)*	p.m.	p.m.
Legal retained earnings:		
– General legal retained earnings	300	300
Voluntary reserves and retained earnings:		
– Free reserve	6,000	6,000
– Special reserve	2,152	2,152
– Available earnings		
– Balance brought forward from previous year	884	866
– Net income for the year	7,067	7,004
Own equity instruments	–	(15)
Total shareholders' equity	**16,563**	**16,467**
Total shareholders' equity and liabilities	**16,632**	**16,543**

p.m. = pro memoria. Non-voting equity securities have no nominal value.

Income statement in millions of CHF

	Year ended 31 December 2016	2015
Income		
Income from investments (dividend income)	6,967	6,831
Other financial income		
– Interest income from loans to Group companies	34	32
– Income from marketable securities and other	35	103
Guarantee fee income from Group companies	102	113
Other income	36	41
Total income	**7,174**	**7,120**
Expenses		
Administration expenses	(38)	(40)
Other expenses	(46)	(51)
Financial expenses	(8)	(5)
Direct taxes	(15)	(20)
Total expenses	**(107)**	**(116)**
Net income	**7,067**	**7,004**

Notes to the Financial Statements

1. Summary of significant accounting policies

Basis of preparation

The financial statements of Roche Holding Ltd, Basel (the 'Company') have been prepared in accordance with the provisions of Swiss Law on Accounting and Financial Reporting (32nd title of the Swiss Code of Obligations, 'CO'). Where not prescribed by law, the significant accounting principles applied are described below.

The Company has prepared its consolidated financial statements in accordance with a recognised accounting standard (International Financial Reporting Standards). In accordance with the CO the Company decided to forgo presenting additional information on audit fees in the notes as well as a cash flow statement.

Valuation methods and translation of foreign currencies

Marketable securities are reported at the lower of cost or market value. All other financial assets, including investments, are reported at cost less appropriate write-downs. Own equity instruments are recognised at cost and deducted from equity at the time of purchase. If the own equity instruments are sold, the gain or loss is recognised through the income statement. Assets and liabilities denominated in foreign currencies are translated into Swiss francs using year-end rates of exchange, except investments which are translated at historical rates. Transactions during the year which are denominated in foreign currencies are translated at the exchange rates effective at the relevant transaction dates. Resulting exchange gains and losses are recognised in the income statement with the exception of unrealised gains which are deferred.

Investments

The major direct and indirect investments of the company are listed in Note 31 to the Roche Group Annual Financial Statements. Ownership interests equal voting rights.

Taxes

Direct taxes include corporate income and capital taxes.

2. Shareholders' equity

Share capital

As in the previous year, share capital amounts to CHF 160 million. The share capital consists of 160,000,000 bearer shares with a nominal value of CHF 1 each. Included in equity are 702,562,700 non-voting equity securities *(Genussscheine)*. They are not part of the share capital and confer no voting rights. However, each non-voting equity security confers the same rights as any of the shares to participate in the available earnings and in any remaining proceeds from liquidation following repayment of the nominal value of the share capital and, if any, participation certificates.

Own equity instruments

During 2016 and 2015 the Company did not purchase any Roche shares. The Company sold 68,111 Roche shares (2015: 316,915 Roche shares) with an average sales price of CHF 250.00 per share (2015: CHF 261.46 per share) and with a net gain of CHF 2 million (2015: net gain of CHF 10 million). Dividend income amounted to CHF 1 million (2015: CHF 2 million).

At 31 December 2016 the Company did not hold any Roche shares. At 31 December 2015 the Company held 68,111 Roche shares with a cost of CHF 15 million which were deducted from equity. The number of own equity instruments held by the Company and its subsidiaries (excluding foundations) meets the definitions and requirements of Article 659b CO. Within the Roche Group Annual Financial Statements some entities (mainly foundations) are included in the consolidation which do not qualify as subsidiaries under Article 659b CO.

Movement in recognised amounts in millions of CHF

			Voluntary reserves and retained earnings				
	Share capital	Legal retained earnings	Free reserve	Special reserve	Available earnings	Own equity instruments	Total equity
As at 1 January 2014	160	300	6,000	2,152	7,745	(217)	16,140
Net income	–	–	–	–	6,749	–	6,749
Dividends	–	–	–	–	(6,728)	–	(6,728)
Transactions in own equity instruments	–	–	–	–	–	129	129
As at 31 December 2014	**160**	**300**	**6,000**	**2,152**	**7,766**	**(88)**	**16,290**
Net income	–	–	–	–	7,004	–	7,004
Dividends	–	–	–	–	(6,900)	–	(6,900)
Transactions in own equity instruments	–	–	–	–	–	73	73
As at 31 December 2015	**160**	**300**	**6,000**	**2,152**	**7,870**	**(15)**	**16,467**
Net income	–	–	–	–	7,067	–	7,067
Dividends	–	–	–	–	(6,986)	–	(6,986)
Transactions in own equity instruments	–	–	–	–	–	15	15
As at 31 December 2016	**160**	**300**	**6,000**	**2,152**	**7,951**	**–**	**16,563**

3. Contingent liabilities

Guarantees

The Company has issued guarantees for certain bonds and notes, commercial paper and credit facilities of Group companies. The nominal amount outstanding at 31 December 2016 was CHF 21.5 billion (2015: CHF 22.2 billion). These are described in Note 20 to the Roche Group Annual Financial Statements.

4. Significant shareholders

All shares in the Company are bearer shares, and for this reason the Company does not keep a register of shareholders. The following figures are based on information from shareholders, the shareholder validation check at the Annual General Meeting of 1 March 2016 and on other information available to the Company.

Controlling shareholders

At 31 December 2016 and 2015, based on information supplied to the Group, a shareholder group with pooled voting rights owned 72,018,000 shares, which represented 45.01% of the issued shares. This group consisted of Ms Vera Michalski-Hoffmann, Ms Maja Hoffmann, Mr André Hoffmann, Dr Andreas Oeri, Ms Sabine Duschmalé-Oeri, Ms Catherine Oeri, Mr Jörg Duschmalé, Mr Lukas Duschmalé and the charitable foundation Wolf. The shareholder pooling agreement has existed since 1948. The figures above do not include any shares without pooled voting rights that are held outside this group by individual members of the group. Ms Maja Oeri, formerly a member of the pool, now holds 8,091,900 shares representing 5.057% of the voting rights independently of the pool.

At 31 December 2016, based on information supplied to the Group, 53,332,863 shares (2015: 53,332,863 shares) are owned by Novartis Holding AG, Basel (participation below 33⅓%).

5. Full-time equivalents

The annual average number of full-time equivalents for 2016 and 2015 did not exceed ten people.

6. Board and Executive shareholdings

Board of Directors

Directors Mr André Hoffmann and Dr Andreas Oeri and certain other members of the founder's families who are closely associated with them belong to a shareholder group with pooled voting rights. At the end of 2016 and 2015 this group held 72,018,000 shares (45.01% of issued shares). Detailed information about this group is given in Note 4. In addition, at the end of the year the members of the Board of Directors and persons closely associated with them held shares and non-voting equity securities *(Genussscheine)* as shown in the table below.

At the Annual General Meeting on 14 March 2017, Prof. Pius Baschera will not stand for re-election. Mrs Anita Hauser will be nominated for election as a new member of the Board of Directors.

Shareholdings of members of the Board of Directors

	Shares		Non-voting equity securities *(Genussscheine)*		
	2016	2015	2016	2015	Other
Ch. Franz	7,639	3,663	4,810	350	
A. Hoffmann	–[a]	–[a]	200	200	
P. Baschera	1	1	4,600	4,600	
J. Bell	300	300	1,647	1,647	
J. Brown	–	n/a	–	n/a	
P. Bulcke	–	–	2,500	2,500	
D. Julius	n/a	350	n/a	2,050	
R.P. Lifton	–	–	–	–	
A. Oeri	–[a]	–[a]	187,793	187,793	
B. Poussot	–	–	–	–	
S. Schwan	–	–	–	–	[b]
C. Süssmuth Dyckerhoff	–	n/a	621[c]	n/a	[c]
P.R. Voser	–	–	5,000	3,600	
B. Weder di Mauro	n/a	200	n/a	800	
Total	**7,940**	**4,514**	**207,171**	**203,540**	

a) Does not include shares held in the shareholder group with pooled voting rights.
b) As a member of the Corporate Executive Committee, Dr Schwan's shareholdings are disclosed in the tables below.
c) Jointly held with close relative.

Corporate Executive Committee

Members of the Corporate Executive Committee and persons closely associated with them held shares and non-voting equity securities as shown in the table below.

Shareholdings of members of the Corporate Executive Committee

	Shares		Non-voting equity securities *(Genussscheine)*		
	2016	2015	2016	2015	Other
S. Schwan	138,011	115,745	29,836	16,179	[a]
S. Ayyoubi	n/a	12,622	n/a	13,223	[a]
R. Diggelmann	–	–	5,776	870	[a]
A. Hippe	6,970	6,970	13,305	9,370	[a]
G.A. Keller	19,191	19,192	18,277	12,897	[a] [b]
D. O'Day	3,065	3,065	12,896	8,143	[a]
C.A. Wilbur	–	n/a	1,714	n/a	[a]
Total	**167,237**	**157,594**	**81,804**	**60,682**	

a) Equity compensation awards: S-SARs, RSUs and Roche Performance Share Plan.
b) Close relatives of Dr Keller held 1,100 Roche shares (2015: 1,100 Roche shares).

At 31 December 2016 members of the Corporate Executive Committee held Stock-settled Stock Appreciation Rights (S-SARs) as shown in the table below. The terms and vesting conditions of these awards are disclosed in Note 26 to the Roche Group Annual Financial Statements and additional supplementary information is in the Remuneration Report included in the Annual Report on pages 124 to 150.

S-SARs awards held at 31 December 2016

Year of issue	2016	2015	2014	2013	2012	2011	2010	Total
S. Schwan	89,517	59,997	54,453	71,472	–	–	–	275,439
R. Diggelmann	29,100	18,006	16,338	17,874	15,000	12,732	–	109,050
A. Hippe	35,811	24,003	21,783	28,590	–	–	–	110,187
G.A. Keller	33,570	22,503	20,424	26,805	15,000	–	–	118,302
D. O'Day	55,950	30,000	27,231	35,739	–	–	–	148,920
C.A. Wilbur	15,339	4,164	5,754	4,594	2,122	–	–	31,973
Total CEC	**259,287**	**158,673**	**145,983**	**185,074**	**32,122**	**12,732**	**–**	**793,871**
Strike price (CHF)	251.50	256.10	263.20	214.00	157.50	140.10	175.50	
Expiry date	Mar. 2023	Mar. 2022	Mar. 2021	Mar. 2020	Mar. 2019	Feb. 2018	Feb. 2017	

At 31 December 2016 members of the Corporate Executive Committee held Restricted Stock Units (RSUs) as shown in the table below. The terms and vesting conditions of these awards are disclosed in Note 26 to the Roche Group Annual Financial Statements and additional supplementary information is in the Remuneration Report included in the Annual Report on pages 124 to 150. In 2016, RSUs as remuneration component for the Corporate Executive Committee were replaced by awarding of corresponding Performance Share Plan (PSP) awards. RSU awards will be vested to the recipient after three years only. Thereafter, the non-voting equity securities may remain blocked for up to ten years.

RSU awards held at 31 December 2016

Year of issue	2016	2015	2014	Total
S. Schwan	n/a	5,466	5,551	11,017
R. Diggelmann	n/a	1,639	1,665	3,304
A. Hippe	n/a	2,186	2,220	4,406
G.A. Keller	n/a	2,049	2,081	4,130
D. O'Day	n/a	2,733	2,775	5,508
C.A. Wilbur	n/a	379	1,691	2,070
Total CEC	**n/a**	**14,452**	**15,983**	**30,435**

At 31 December 2016 members of the Corporate Executive Committee as shown in the table below held PSP awards from the PSP performance cycles 2015–2017 and 2016–2018. The terms and vesting conditions of these awards are disclosed in Note 26 to the Roche Group Annual Financial Statements and additional supplementary information is in the Remuneration Report included in the Annual Report on pages 124 to 150. Each award will result in between zero and two non-voting equity securities or shares (before value adjustment), depending upon the achievement of the performance targets and the discretion of the Board of Directors. After vesting, the non-voting equity securities or shares may remain blocked for up to ten years. At the end of the 2014–2016 cycle the performance targets were not achieved and accordingly the participants received none of the originally targeted non-voting equity securities. The total target number of awards for the other outstanding performance cycles at 31 December 2016 are shown in the table below.

Roche Performance Share Plan awards held at 31 December 2016

	PSP 2016–2018	PSP 2015–2017
S. Schwan	9,968	4,872
R. Diggelmann	3,239	1,461
A. Hippe	3,987	1,948
G.A. Keller	3,738	1,827
D. O'Day	6,230	2,436
C.A. Wilbur	1,706	440
Total CEC	**28,868**	**12,984**
Allocation date	Feb. 2019	Feb. 2018

Information relating to the number and value of rights, options and awards granted to employees of the Roche Group and members of the Board of Directors and Corporate Executive Committee of the Company are disclosed in Note 26 and Note 30 to the Roche Group Annual Financial Statements.

Appropriation of Available Earnings

Proposals to the Annual General Meeting in CHF

	2016	2015
Available earnings		
Balance brought forward from previous year	883,553,951	865,844,387
Net profit for the year	7,067,441,443	7,004,467,434
Total available earnings	**7,950,995,394**	**7,870,311,821**
Appropriation of available earnings		
Distribution of an ordinary dividend of CHF 8.20 gross per share and non-voting equity security *(Genussschein)* as against CHF 8.10 last year	(7,073,014,140)	(6,986,757,870)
Total appropriation of available earnings	**(7,073,014,140)**	**(6,986,757,870)**
To be carried forward on this account	**877,981,254**	**883,553,951**

Statutory Auditor's Report

To the General Meeting of Roche Holding Ltd, Basel

Report on the Audit of the Financial Statements

Opinion

We have audited the financial statements of Roche Holding Ltd, which comprise the balance sheet as at 31 December 2016, and the income statement for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion the financial statements (pages 148 to 155) for the year ended 31 December 2016 comply with Swiss law and the company's articles of incorporation.

Basis for Opinion

We conducted our audit in accordance with Swiss law and Swiss Auditing Standards. Our responsibilities under those provisions and Standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the entity in accordance with the provisions of Swiss law and the requirements of the Swiss audit profession and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Report on Key Audit Matters based on the circular 1/2015 of the Federal Audit Oversight Authority

We have determined that there are no key audit matters to communicate in our report.

Responsibility of the Board of Directors for the Financial Statements

The Board of Directors is responsible for the preparation of the financial statements in accordance with the provisions of Swiss law and the company's articles of incorporation, and for such internal control as the Board of Directors determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors is responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board of Directors either intends to liquidate the entity or to cease operations, or has no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law and Swiss Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Swiss law and Swiss Auditing Standards, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

— Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

— Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of internal control.

— Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made.

— Conclude on the appropriateness of the Board of Directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the entity to cease to continue as a going concern.

We communicate with the Board of Directors or its relevant committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Board of Directors or its relevant committee with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

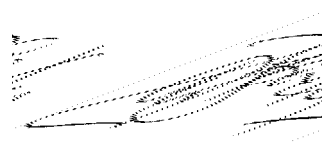
From the matters communicated with the Board of Directors or its relevant committee, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report, unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Report on Other Legal and Regulatory Requirements

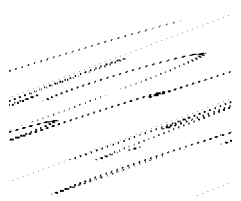
In accordance with article 728a para. 1 item 3 CO and the Swiss Auditing Standard 890, we confirm that an internal control system exists, which has been designed for the preparation of financial statements according to the instructions of the Board of Directors.

We further confirm that the proposed appropriation of available earnings complies with Swiss law and the company's articles of incorporation. We recommend that the financial statements submitted to you be approved.

KPMG AG



Ian Starkey
Licensed Audit Expert
Auditor in Charge



Marc Ziegler
Licensed Audit Expert

Basel, 24 January 2017

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Next Annual General Meeting:
14 March 2017

Cautionary statement regarding forward-looking statements
This Annual Report contains certain forward-looking statements. These forward-looking statements may be identified by words such as 'believes', 'expects', 'anticipates', 'projects', 'intends', 'should', 'seeks', 'estimates', 'future' or similar expressions or by discussion of, among other things, strategy, goals, plans or intentions. Various factors may cause actual results to differ materially in the future from those reflected in forward-looking statements contained in this Annual Report, among others: (1) pricing and product initiatives of competitors; (2) legislative and regulatory developments and economic conditions; (3) delay or inability in obtaining regulatory approvals or bringing products to market; (4) fluctuations in currency exchange rates and general financial market conditions; (5) uncertainties in the discovery, development or marketing of new products or new uses of existing products, including without limitation negative results of clinical trials or research projects, unexpected side effects of pipeline or marketed products; (6) increased government pricing pressures; (7) interruptions in production; (8) loss of or inability to obtain adequate protection for intellectual property rights; (9) litigation; (10) loss of key executives or other employees; and (11) adverse publicity and news coverage.

The statement regarding earnings per share growth is not a profit forecast and should not be interpreted to mean that Roche's earnings or earnings per share for 2017 or any subsequent period will necessarily match or exceed the historical published earnings or earnings per share of Roche.

Links to third-party pages are provided for convenience only. We do not express any opinion on the content of any third-party pages and expressly disclaim any liability for all third-party information and the use of it.

The Roche Finance Report is published in German and English. In case of doubt or differences of interpretation, the English version shall prevail over the German text.

Our reporting consists of the actual Annual Report and of the Finance Report and contains the annual financial statements and the consolidated financial statements. With regards to content, the Management Report as per the Articles of Incorporation consists of both aforementioned reports with the exception of the Remuneration Report.

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