

“SYNGENTA AG”

“SEEDS AND CROP PROTECTION”

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COMPANY REPORT

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Chinese fever on Agro technology

- ChemChina takeover offer implied a premium of 105 CHF per share, overvaluing the stock
- Yet, Syngenta operates in a sector that is growing and it will continue to do so due to: agriculture output growth; better performance of hybrid and Genetically Modified seeds compared to conventional ones; and increasing number of crop protection applications for each crop
- The growth of agriculture output will be driven by: increasing food consumption per capita; energy demand increase; and population growth
- Besides the forecasted growth in sales, Syngenta, also will achieve margins improvements (Gross Profit, EBIT, Net Income and NWC to Sales)
- Syngenta will continue to expense 10% of Sales in R&D cementing her position in patented active substances development that give her a competitive advantage
- Modest market share gains are forecasted in both sectors in EMEA, LatAm, North America and APAC, except for Crop Protection in North America, in the period 2018-2022

Recommendation: **SELL***Vs Previous Recommendation***Price Target FY18:** **77.84 \$***Vs Previous Price Target***Price (as of 2-Jan-18)** **92.84 \$**

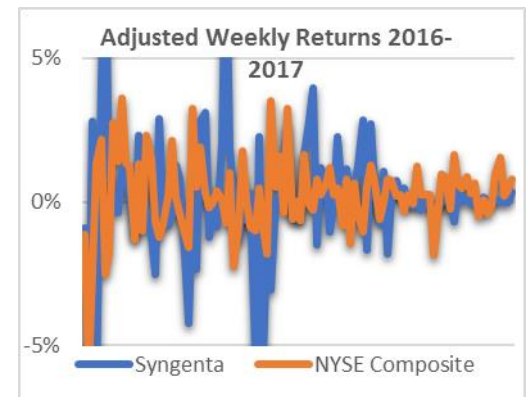
Bloomberg: SIT:US

52-week range (€) 78.20\$-92.96\$

Market Cap (€m) 42 974.800

Outstanding Shares (m) 462.891

Source: Bloomberg



Source: Bloomberg

(Values in € millions)	2015	2016E	2017F
Revenues	13 411	12 790	12 936
EBIT	2 021	1 806	2 011
Net Profit	1 344	1 181	1 405
EPS	2,89	2,55	3,04
P/E	26,18	30,65	
R&D expenses	1 362	1 299	1 314
Investment in NWC	832	106	-770
CAPEX	214	266	369
FCF	798	1 288	1 937
ROE	16%	14,8%	18,9%
RONIC	-19,2%	14,4%	10,1%

Source: Student estimates

THIS REPORT WAS PREPARED EXCLUSIVELY FOR ACADEMIC PURPOSES BY [TIAGO GOMES ROLIM], A MASTERS IN FINANCE STUDENT OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS. THE REPORT WAS SUPERVISED BY A NOVA SBE FACULTY MEMBER, ACTING IN A MERE ACADEMIC CAPACITY, WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL.
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Company overview

Syngenta AG is a swiss agribusiness company, headquartered in Basel, that generated 12,79\$ billion sales and 1,399\$ billion operating profit in 2016 (11% EBIT margin). Syngenta operates mainly in Crop Protection and Seeds segments and also in Lawn and Garden segment. Currently, it is world top seller in Crop Protection market, top 3 seller in Seeds market and it is also a relevant player in Lawn and Garden market.

Syngenta was founded in November 2000 resulting from the spin off and merger of the seed and crop protection businesses of Novartis AG and the agrochemical business of AstraZeneca PLC. The Company is listed on the Swiss Stock Exchange (SIX) under the Ticker SYNN and on the New York Stock Exchange (NYSE) under the Ticker SYT. Recently, in 2017, Syngenta was acquired by the Chinese state-owned China National Chemical (ChemChina) in a 43\$ billion deal. As a result, Syngenta will be delisted from the stock market.

Products

Under the Crop Protection segment (75% of 2016 sales), Syngenta sells: herbicides (selective -control weeds without harming the crop- and non-selective -kill all vegetation that makes contact with) mainly for corn, soybean, cereals and rice; fungicides that prevent and heal fungal diseases (e.g mildew) mainly for corn, cereals, fruits, grapes, rice, soybean and vegetables; insecticides that control pest attacks mainly for fruits, vegetables and field crops (corn, wheat, barley, soybean...); and seed traits which are fungicides, insecticides and nematicides specific to inoculate seeds mainly for corn, soybean, cereals, oilseeds and cotton.

Under the Seeds segment (20% of 2016 sales), Syngenta sells mainly hybrid seeds and also some genetic modified (GM) seeds which are more resistant to diseases, pest attacks and severe weather conditions than conventional seeds. Syngenta sells: field crop seeds (77% of Seeds sales in 2016) like corn, soybean, rice, cereals, oilseeds and sugar beet; and vegetable seeds (23% of Seeds sales in 2016). Besides selling its branded seeds, Syngenta receives royalty income from licensing agreements with other companies.

Lawn and Garden segment represents 5% of Syngenta sales in 2016 and it is composed of: consumer home and garden products; turf, landscape and professional pest management; and ornamental flowers.

Syngenta sell its products in more than 90 countries around the world operating thus in 4 world regions: Europe, Middle East and Africa (EMEA); North America, Latin America (LatAm) and Asia-Pacific (APAC). EMEA is the main regional source of revenue accounting for 30% of 2016 sales. In terms of countries, the main source of revenue is from Brazil and USA that jointly accounted for 40% of Syngenta 2016 sales (17% and 23%, respectively).

Competitors

Syngenta operates in a market highly intensive in knowledge, technology and capital whose main players, besides Syngenta, are Monsanto, Bayer, DowDupont and BASF -known as “Big 6”-, both in Seeds and Crop Protection segments. Other major relevant players in Seeds market are Vilmorin, KWS Saat and Land O’Lakes. Other relevant major players in Crop Protection are Adama, Sumitomo Chemical, FMC, UPL Limited, Nufarm and Platform Specialty Products.

Management Team

Regarding the management team, the executive committee is composed by 6 elements of which J. Erik Fyrwald is the CEO that joined Syngenta in June 2016 and had previously served as Vice President of the Agriculture and Nutrition division of Dupont (2003-2008). The Head of the Crop Protection division is Jonathan Parr that was an executive in AstraZeneca before the spin off of its agrochemical division. Mark Patrick is the CFO and was also an executive at AstraZeneca. The Head of Seeds division is Jeff Rowe that joined Syngenta in 2016 and was previously Vice President of Strategic Services and Planning at Dupont seeds subsidiary, Pioneer. The Board of Directors is formed by 8 elements whose Chairman is Jianxin Ren, a Chinese national that is the Chairman of ChemChina.

Shareholder structure

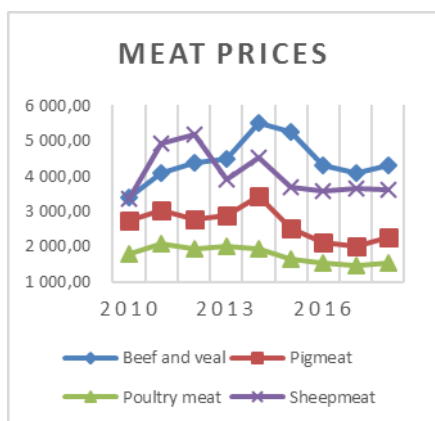
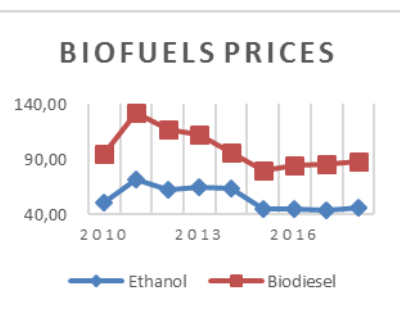
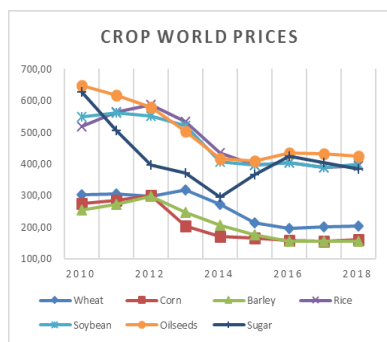
98% of Syngenta shares are currently owned by ChemChina. The delisting of the stock was already approved but it is not yet effective. In the future, ChemChina plans to do the IPO of Sygenta as it happened with ADAMA, an israeli crop protection company, top seller of generics, that was bought by ChemChina in 2011 (and consequently delisted) and the IPO was launched in 2014.

Agriculture Outlook

Macroeconomics

Real GDP growth	2017F	2018F
EU-28	2,34%	2,08%
USA	2,18%	2,34%
Brazil	0,17%	1,75%
China	6,77%	6,50%
India	6,72%	7,37%

In 2017, according to the World Bank, global population is greater than 7,5 billion inhabitants and it will reach, in 2022, almost 8 billion inhabitants while GDP, according to IMF, is also increasing, specifically at impressive rates in emerging economies (for instance, China and India, that account for more than one third of global population, are expected to achieve nearly 6% and 7% per year real GDP growth respectively until 2022). Larger population and income will drive higher demand for food, animal feed and energy, therefore world agriculture output has to increase. In order to meet such agriculture output increase, better seed and crop protection (among other inputs like fertilizers and machinery) solutions need to be developed due to: land scarcity that must be compensated by yield productivity increases; and climate changes that have caused more extreme weather conditions that negatively impact agriculture



output, therefore, seeds varieties more resistant to climate changes and crop protection products that improve crop defenses against climates changes need to be developed.

Although the historical growth on food, animal feed and biofuels demand, overall, world crop prices decreased over the period 2010-2016, due to low confidence on GDP performance and high crop stocks, which affects farmers decisions regarding investment and production. According to FAO Agriculture Outlook 2017-2026, crop prices will steadily increase every year, but not up to 2010 price levels. Ethanol and biodiesel prices are also expected to increase but not to 2012 maximum prices. Meat price is also forecasted to increase slightly. Such potential prices increase will positively, although modestly, affect farmers expectations and as consequence increase global agriculture output causing agriculture inputs market to grow (seeds, crop protection products, fertilizers...).

Demand and Supply of main crops and meat

World Consumption (kg) per capita	2012	2013	2014	2015	2016	2017F	2018F	2019F	2020F	2021F	2022F
Wheat	66,91	67,05	66,94	67,09	67,10	67,64	67,66	67,58	67,50	67,45	67,41
Maize	17,67	17,70	17,70	18,08	18,01	18,10	18,19	18,28	18,36	18,47	18,59
Rice	54,53	54,73	54,62	54,42	54,57	54,64	54,68	54,69	54,75	54,76	54,78
Sugar	22,39	22,40	22,75	22,82	23,07	23,18	23,25	23,40	23,57	23,78	23,95
Beef and veal	6,49	6,52	6,49	6,41	6,45	6,51	6,50	6,48	6,47	6,47	6,48
Pig meat	12,28	12,49	12,57	12,47	12,28	12,27	12,21	12,23	12,24	12,22	12,18
Poultry meat	13,24	13,23	13,31	13,67	13,79	13,86	13,84	13,89	13,92	13,96	14,00
Sheep meat	1,66	1,70	1,69	1,72	1,73	1,73	1,75	1,76	1,79	1,81	1,83

Corn is mainly used to feed cattle (around 60% of total corn produced) and to produce biofuels (intensively used in USA ethanol production), therefore increasing meat consumption per capita, namely in developing economies, and increasing importance of biofuels will drive higher production of corn. According to FAO, 2016 world corn production was equal to 1 034 329 thousand tons, being the largest producers of corn in the world the USA, China, Brazil and EU-28 (37%, 21%, 6% and 6%, respectively, in 2016). The penetration of GM corn in USA is higher than 90% which explains the USA top yield of 10 tonnes per ha while the world average is less than 6 -China and Brazil yields are slightly below the world average. In 2016, the average world price per ton of corn was 157\$ (vs 300\$ recent maximum in 2012).

Wheat is mainly used for food (around 80% of total wheat produced) and feed (around 20%). 759 371 thousand tons of wheat were produced in 2016, being the largest producers China, EU-28, India, Russia and USA with 29%, 21%, 13%, 9% and 7%, respectively, of the global production. GM wheat was produced in 2017 in UK after being approved by the Government and it is expected considerable yield improvement. In 2016, the average world wheat price per ton was 195\$ (vs 318\$ maximum in 2013). Barley is the third most produced cereal in the world after corn and wheat, whose ends are mainly animal feed and beer industry.

Soybean is mainly used for animal feed and the world production is mainly concentrated in the American continents. USA produces 34% while Brazil 31% of global soybean produced which was equal to 341 255 thousand tons in 2016. Penetration rates of GM in soybean crop are very high, being 80%

worldwide and more than 90% in USA. In 2016, soybean price per ton was 403\$, on average, contrasting with the 562\$ per ton in 2011.

Rice is mainly used for food and the biggest producers are asian countries where yields are very low compared to USA modern agriculture (8 tons/ha), for instance, China’s yield is around 6 tons/ha while in India is below 4. In 2016, almost 500 000 thousand tons of rice were produced, 28% and 22% in China and India, respectively. In 2016, rice price per ton was 405\$ (vs 588\$ in 2012).

Oilseed rape (or canola) is one of the largest sources of vegetable oil (after soybean and palm oil) whose end is mainly animal feed and biofuel production, being mainly produced in Canada and EU-28. Average oilseed rape price was 434\$ per ton in 2016 (vs 647\$ in 2010).

Sugar cane is mainly produced in Brazil (40% of world production), India (tropical climates) and China. Sugar cane is mainly used for sugar and ethanol productions (namely in Brazil). While sugar cane accounts for 80% of sugar production, sugar beet, which is mainly produced in EU28 and Russia (temperate climates), accounts for 20% of world sugar production. GM penetration rate in sugar beet is high, reaching almost 100% in USA, but in sugar cane it is still being developed. In 2016, the price of raw sugar was 403\$ per ton, far below 627\$ of 2010.

World Production, Thousand tonnes	2016	2017F	2018F	2019F	2020F	2021F	2022F
<u>Wheat</u>	759 371,73	744 155,04	755 511,74	763 320,96	771 415,27	780 003,15	788 145,65
<u>Maize</u>	1 034 329,01	1 042 428,65	1 050 807,01	1 066 211,32	1 078 870,90	1 096 046,76	1 109 705,64
<u>Rice</u>	497 901,78	506 494,20	512 489,96	518 165,34	524 237,18	529 997,44	536 051,86
<u>Soybean</u>	341 255,88	338 640,87	344 591,48	350 672,45	358 220,68	364 654,23	372 899,82
<u>Oilseeds</u>	483 798,86	484 646,61	492 325,53	500 036,17	509 345,16	517 352,98	527 243,20
<u>Sugar beet</u>	264 973,54	276 298,18	276 245,99	270 810,29	269 535,70	268 786,80	268 917,21
<u>Sugar cane</u>	1 879 212,01	1 918 788,55	1 947 201,23	1 977 944,29	1 997 994,25	2 017 968,45	2 044 348,14

World Yields (Ton/Ha)	2016	2017F	2018F	2019F	2020F	2021F	2022F
<u>Wheat</u>	3,43	3,34	3,38	3,41	3,44	3,47	3,50
<u>Maize</u>	5,81	5,85	5,90	5,96	6,03	6,09	6,15
<u>Rice</u>	3,05	3,09	3,13	3,16	3,20	3,23	3,27
<u>Soybean</u>	2,79	2,68	2,70	2,73	2,76	2,78	2,81
<u>Oilseeds</u>	212,43	216,04	217,89	219,46	221,48	223,24	225,26
<u>Sugar beet</u>	58,70	59,99	60,12	60,84	61,11	61,41	61,69
<u>Sugar cane</u>	68,82	69,34	69,69	70,11	70,45	70,78	71,17

Biofuels

Grains from crops like corn, wheat, barley and soybean... are mainly used for food and animal feed but they are also important to produce biofuels (ethanol and biodiesel). Ethanol fuel is an ethyl alcohol, derived from corn and sugarcane biomass, which is blended with gasoline to be used as motor fuel. Biodiesel results from the blending of vegetal oil (e.g. soybean oil) or animal fats with petrodiesel.

Although D.Trump administration will pull USA (2nd largest energy consumer in the world and biggest ethanol producer) back from the Paris Agreement in 2020, it is a global objective to reduce the negative impact of fossil fuels on environment, which has to be compensated by renewable energy and biofuels production. USA and Brazil accounts for 73% of ethanol world production (49% and 24%, respectively) and in the future they will continue to be leading producers. Also, they account for 30% of biodiesel world production (20% and 10%, respectively). In USA, the Energy Independence and Security Act of 2007 targeted 36 billion gallons of renewable fuel use (fuel which is blended with ethanol and biodiesel) in 2022. In Brazil, the government mandates a 25% blend rate for biofuels, where sugar cane is the main input for ethanol production. Compared to corn based ethanol, sugar cane based ethanol is more environmental friendly (CO₂ emissions of sugar cane based ethanol are 10% of oil based gasoline while corn based ethanol emissions are 80% of oil based gasoline) and cheaper to produce (45\$ of brazilian sugar cane based ethanol produce equivalent energy to 85\$ of USA corn based ethanol). EU-28 is the largest producer of biodiesel (36% of world production) in 2016 and it aims, by 2020, to use 10% of all transport fuel from biofuels energy. Thus, ethanol and biodiesel production increases will continue to drive agriculture output increase, namely corn and sugar cane crops.

WORLD Production, Thousand litres	2016	2017F	2018F	2019F	2020F	2021F	2022F
Ethanol	119 743,14	123 656,61	126 809,94	128 401,49	130 693,87	131 496,16	132 849,39
Biodiesel	36 176,62	37 346,60	38 643,70	39 578,97	40 282,55	40 172,01	40 119,74

Genetically modified (GM) organisms

Besides pollination, a natural breeding process caused by the action of bees, birds or wind, there are two other methods that humans use to cross seed varieties: hybridation and changing the DNA of the seed. Hybrid seeds result from a breeding process in which two different varieties are natural crossed in a

controlled environment to create another variety, the hybrid, whose characteristics in terms of yield productivity, pest and insect resistance, weather adverse conditions resistance... are an improved version of the 2 former varieties. Currently, GM seeds are being developed which result from changing the DNA of the plant with recourse to technology, for instance, GM corn has a bacteria that kills insects that try to eat the corn leaves. Although GM seeds are more efficient than hybrid seeds, they represent a low portion of global seed market because there are a lot of health concerns regarding them. Due to this, the penetration of GM seeds has occurred specially in crops destined to animal feed while in crops destined to human food the penetration is low, although, people end to eat the meat, eventually. According to World Health Organization (WHO), *"GM foods currently available on the international market have passed safety assessments and are not likely to present risks for human health. In addition, no effects on human health have been shown as a result of the consumption of such foods by the general population in the countries where they have been approved"*. Therefore, in the future, I believe that GM seeds in crops destined to human food will be widely approved and cause a strong growth in Seeds market (conventional seeds will suffer from cannibalization but they will still be the major contributor of overall seeds market) because the forecasted population growth and consequent urban areas growth will further drive higher pressure on natural resources like land and water requiring that agriculture can achieve higher yields per area and water used to meet such constraints. Overall, GM seeds constitute an huge opportunity in the future to seed companies like Syngenta.

The Sector

Crop Protection segment

Global Market

The Crop Protection market as of 2014 valued almost 60\$ billion, and since then it has been growing, and is mainly constituted by herbicides, insecticides and fungicides. It is expected a compounded annual growth rate of 4,4% from 2016 to 2021, reaching 81,1\$ billion by 2021. Although companies like Syngenta continue to invest a lot and develop new products, in this new century, the number of new pesticide active ingredients has been decreasing.

Although the overall crop protection market has grown over the years and it will continue to grow, there are some challenges to the companies that market such products, namely the health and environmental implications that some products imply. The most famous case is the glyphosate substance used in

rop Protection Sales \$M	2016	Growth
Syngenta	9 571	-4%
Bayer	8 846	-4%
BASF	6 188	-4%
Dow	4 631	-6%
Monsanto	3 514	-26%
DuPont	2 884	-5%
Adama	2 877	0%
FMC	2 275	1%

herbicides that received a lot of mediatic cover regarding being responsible for causing cancer. Although the European Chemical Agency concluded that glyphosate doesn't cause cancer, in the future, increasing health and environmental concernings may do a lot of pressure to prohibit glyphosate products. Recently, in October 2017, European Comission renew the approval for glyphosate herbicides for 5 years. I believe that these herbicides will continue to be sold beyond the 5 years simply because the alternatives to efficiently eliminating weeds without glyphosate herbicide are much more expensive (mechanichly and, particularly, manualy). The margins on glyphosate herbicides are low because Monsanto patent ended in 2000 what doesn't make an appealing product to companies like Syngenta due to the existence of many generics. Therefore, in order to seek better margins and meet environmental and health concerns, it is expected the development of new substances that are also efficient to control weeds as it is glyphosate, that will benefit from market power due to patent protection.

Also, in Brazil, ANVISA -Agência Nacional Sanitária-, restricted the commercialization of the substance paraquat used in herbicides which is mainly used mainly to dessecate the crops in the later stages of the culture to ease harvesting. The purpose is to avoid manual applications of the product by farmers because of the risks of causing Parkinson disease and only allow mechanized applications by closed cabin tractors. Syngenta main paraquat herbicides are GRAMOXONE and GRAMOCIL which will slightly suffer decrease in sales.

EU will probably ban neocotinoid insecticides on groudts that the application of these insecticides harm bees whose importance to environment is crucial due to their polinization acitivity. These insecticides were already temporarily banned in 2003 and with Brexit it will probably became definitive because UK strongly opposed the ban. Syngenta CRUISER sales will be strongly affected.

Products

In 2016, Syngenta Crop Protection sales were 9,571\$ billion (75% of Syngenta sales) contrasting with the maximum of 11,381\$ billion in 2014. Since then, sales have been decreasing due to volume and currency effects. Since agriculture commodity prices have been decreasing, farmers reduced the amount of crop protection products used in order to fight margins reduction (due to crop prices decrease) through cost savings. Although reducing the number of pesticides applications may negatively impact the final output, farmers are willing to take that risk to decrease inputs used. Also, climate changes that cause more

extreme weather conditions (drought and flood) have negatively impacted the quantity of pesticides sold. When it rains a lot, the fields are extremely wet not allowing mechanized applications of pesticides (mainly fungicides to prevent fungal diseases caused by the excess of humidity, e.g mildew). When there are extended periods of dry, also the need for applications decrease. In 2016, overall Crop Protection sales decreased 4%. Although, Syngenta has the capacity to mark higher prices (2%) to offset inflation and in some countries (namely Russia and Ukraine) to offset negative currency effects, volume of sales decreased 4% while currency effects negatively impacted sales at 2%.

Crop Protection sales of Syngenta are grouped into 6 categories: selective herbicides, non selective herbicides, fungicides, insecticides, seed care and other crop protection.

Selective herbicides accounted 2,853\$ billion sales in 2016 which is 30% of total Crop Protection sales. At constant exchange rates (CES), sales would have been higher 2% (3% price effect and -1% volume effect) compared to 2015, but due to currency effects (-3%) sales were 1% lower than in 2015. In 2018, Syngenta will receive approval from EPA (Environmental Protection Agency) in USA to sell his new soybean and cotton herbicide TAVIUM which is an improved version to eliminate glyphosate resistant broadleaf and grass weeds.

Non selective herbicides sales were 0,773\$ billion in 2016 which is 8% of Crop Protection sales. Due to the launch in the market of non selective herbicides generics, Syngenta and its main competitors sales of non selective herbicides are expected to continue to decrease since the profit margins on these products have been decreasing due to cheaper generic products. At CES, in 2016, these sales decreased 13% (5% in volume and 8% in price), plus due to 2% negative currency effect, overall non selective herbicide sales decreased 15%.

Fungicides sales were 3,157\$ billion in 2016 which represents 33% of Crop Protection sales. The 8% volume decrease of these sales that was partially offset by a 4% price increase (-4% growth at CES) plus the negative currency effect (-2%) made overall sales decrease 6%. The main fungicides sold by Syngenta are: AMISTAR, BRAVO, MIRAVUS, ORONDIS and ELATUS.

Insecticides sales were 1,643\$ billion in 2016 (17% of Crop Protection sales), 4% less than in 2015. Quantities sold decreased 4%, prices increased 2% and currency effects were 2% negative.

Seed care sales were 1,003\$ billion in 2016, representing 10% of Crop Protection sales. The positive performance of Seed care products was the

combination of 3% volume growth plus 2% price growth. Overall sales increased 1%, due to the negative impact of currency effects (-4%).

The last category is other crop protection products whose sales in 2016 were 0,142\$ billion, the same as in 2015.

In terms of regions, Crop Protection sales decreased by two consecutive years in the 4 regions where Syngenta operates except in APAC in 2016 where sales slightly improved. Bayer, BASF and Monsanto also performed negatively in Crop Protection in 2016. Monsanto decreased its sales 26%, while Bayer and BASF both decreased 4%.

Projections

Crop Protection Sales	2016	2017F	2018F	2019F	2020F	2021F	2022F
EMEA	2 862	2 889	3 034	3 193	3 355	3 517	3 688
Market Share	18%	18%	18%	19%	19%	20%	20%
North America	2 306	2 333	2 367	2 410	2 450	2 493	2 535
Market Share	25%	25%	25%	25%	25%	25%	25%
Latin America	2 860	2 918	3 001	3 086	3 177	3 265	3 363
Market Share	15%	15%	15%	15%	15%	16%	16%
APAC	1 543	1 543	1 622	1 720	1 815	1 906	2 006
Market Share	11%	11%	11%	11%	11%	12%	12%

Crop Protection sales were forecasted on regional basis estimating the global crop protection market as the sum of each main crop harvested area (based on FAO projections) multiplied by the estimated input crop protection cost per hectare (based on US Department of Agriculture historical values for 2012-2016). To the average input crop protection cost per hectare was added the forecasted inflation for USA economy in 2017-2022. For instance, in 2017, 45 306 million hectares of corn are forecasted to be harvested and I expect the average input crop protection cost per hectare to be of 28,8\$. The same was done for wheat, coarse grains, rice, soybean, oilseed and sugar beat crop.

The end of the patented life of some of Syngenta products, the depreciation of currencies in countries where Syngenta sell its products (like Russia, Ukraine and Brazil) versus the dollar combined with the bad market conditions for farmers highly contributed to the bad performance of Crop Protection sales, in recent years. The launch of generics products is a major threat to Syngenta sales since they are cheaper and almost or equally effective to control and prevent weeds, diseases, insect attacks...

Yet, I expect Syngenta sales to slightly improve in 2017 (including onwards). I consider the potential for market share gain in the 4 regions to be little but the overall Crop Protection market will steadily increase driven by the crop acreage increase needed to guarantee increasing food, animal feed and energy

demand and I expect the increase of input crop protection cost per hectare at the inflation rate, and the increase of Syngenta market share in crop protection market in EMEA by 0,5% on year between 2018-2022, and 0,25% on year between 2018-2022 in LatAm and APAC. In North America, I expect Syngenta to keep her market share of 2016. But, I don't expect Syngenta to retrieve 2014 maximum market shares.

Seeds segment

Global market

Seeds Sales \$M	2016	Growth
Monsanto	9 988	-2%
Dupont	6 632	-2%
Syngenta	2 556	-7%
Dow	1 543	8%
Vilmorin	1 513	7%
Bayer	1 507	6%
KWS Saat	1 195	4%

The seed market value 51,6\$ billion segmented by conventional seeds and GM seeds in 2016. By 2020, it is expected that this market reaches 60\$ billion driven by continuing improvements in hybrid seeds and the growth of GM seeds (15\$ billion) that are relatively recent, therefore, having an huge growth potential.

Products

After subtracting eliminations, Syngenta Seeds sales were 2,556\$ billion in 2016 which represents 20% of Syngenta total sales.

Syngenta seeds sales have been decreasing since 2012 due to volume and currency effects, although partially offset by price growth. In 2016, Seeds (before eliminations) sales decreased 6% (-3% at CER of which -4% is the volume effect).

Syngenta sells both field crop and vegetable seeds in its wide range portfolio of seeds, but when reporting the revenue breakdown, Syngenta groups corn and soybean (both field crops) seeds sales separately in order to evidence the importance of these two crops in overall seeds sales (52% of Seeds sales (before eliminations) in 2016).

Corn and soybean seeds sales (1,375\$ billion) decreased 12% in 2016 due to a 10% reduction in quantity sold and both price and currency effects negatively impacted sales by 1%. Syngenta launched recently a range of breakthrough technology AGRISURE corn seeds that are specific to solve problems faced in modern agriculture: AGRISURE ARTESIAN that maximizes the corn yield independently of the amount of rain, i.e, for given amount of rain, ceteris paribus, the yield will be maximum; AGRISURE VIPTERA and DURACADE are also corn seed brands that are specifically aimed to control insect attacks. VIPTERA has been particularly successful in Brazil and DURACADE corn has been recently approved by chinese authorities to be

imported to China. ENOGEN is a GM corn seed sold in USA specifically designed to ethanol industry. Overall ethanol production in USA is not expected to grow but the chinese import approval of DURACADE corn will boost Syngenta sales and I expect 0,75% market share increase per year in North America seed sales between 2018 and 2022.

The remaining field crops were 0,666\$ billion accounting for 25% of Seeds sales (before eliminations). There was a slight 1% overall growth in these sales boosted by 9% volume growth. Price growth was 2% and currency effects were 10% negative. HYVIDO hybrid barley has been proved a very successful crop when compared to top varieties which are sold by the german competitor KWS Saat.

Vegetables seeds sales were 0,616\$ billion in 2016 representing 23% of Seeds sales and an overall null growth from 2015 since the 4% price growth was fully offset by 1% negative volume growth and 3% negative currency growth. The increasing preference of consumers for fresh vegetables and the low commodity prices for field crops will drive the continuing growth of vegetables production by farmers. I expect Syngenta to capture some of the growth in Vegetable inputs market mainly in seeds due to the better performance in terms of production of hybrid and GM seeds compared to conventional seeds. Such growth in vegetable inputs market (also for crop protection) will be shared by the main players in the sector and not concentrated in very few players. Actually, I expect that seed companies like Vilmorin, KWS Saat and Land O'Lakes capture more market growth than the traditional "Big 6", but the market will continue to be more concentrated around these big companies (Big 6+ KWS, Vilmorin and Land O'Lakes).

Monsanto, top seller in Seeds, also performed negatively in Seeds both in 2015 (-5%) and 2016 (-2%). Only, smaller players (compared to Syngenta and Monsanto) in Seeds like Vilmorin, KWS Saat and Bayer increased their sales in both years.

Projections

Seeds Sales	2016	2017F	2018F	2019F	2020F	2021F	2022F
EMEA	973	981	1 085	1 200	1 317	1 437	1 564
Market Share	9%	9%	10%	11%	11%	12%	13%
North America	933	942	1 087	1 243	1 402	1 568	1 737
Market Share	5%	5%	6%	7%	8%	8%	9%
Latin America	448	459	530	602	677	752	832
Market Share	5%	5%	6%	7%	8%	8%	9%
APAC	303	304	425	559	702	851	1 012
Market Share	2%	2%	3%	4%	4%	5%	6%

Following the acquisition of Nidera Seeds by Syngenta from COFCO in November 2017, I expect market share improvement in Latin America by 0,75% per year between 2018 and 2022, recovering the market share lost in the past two years. I also expect growth in sales derived from market share improvement in the remaining regions by 0,75% per year between 2018-2022 resulting from the increasing sales of hybrid and, especially, GM seeds of intensive R&D companies like Syngenta, replacing sales of conventional seeds.

Patents

Crop Protection (and seeds) market are protected by patents in order to avoid free riders to take advantage of the high investment in R&D made by companies like Syngenta. The patents usually have a life span between 10 to 14 years, therefore, some of the leading market products are expected to come off patent in the next years, opening the commercialization of products with such active substance to other companies and, as consequence, reducing the profit margins of such products. It is expected that 2 Syngenta products will come off patent in the next 2 years valuing 785\$ million. AXIAL, Syngenta leading selective herbicide for barley and wheat, whose global sales are estimated at 400\$ million expired this year in USA and it will expire in EU-28 in 2019. This will not negatively impact Syngenta herbicide sales in the next years because there are measures than can be taken to extend off patent crop protection products: Supplementary protection certificates which is an european mechanism that extends the patent life for 5 years; extended mixture patent protection which increases the patent life of the active substance if such substance is mixed with another substance; and the data regarding the substance is protected by at least 10 years.

Lawn and Garden segment

Although Lawn and Garden products are at its core seed and crop protection products, there is a gain to group them separately (as Syngenta reports) as a different segment since it is destined to a very distinct customer from farmers (home and professional growers), therefore causing margins to be completely different. Lawn and Garden sales were 0,663\$ billion in 2016, 2% higher than 2015 (4% CES growth only caused by volume effect) but far from 2012 0,757\$ billion maximum sales. Historically, Lawn and Garden sales have been around 5% of Syngenta Total Sales and I directly forecast them in the future as the same percentage of Total Sales.

M&A activity in the sector

<u>Acquirer</u>	<u>Acquiree</u>	<u>Offer Price</u>	<u>Share Price</u>	<u>Premium</u>	<u>Date</u>
ChemChina	Syngenta	465+16 CHF	376 CHF	105 CHF	3/02/16
Bayer	Monsanto	128 \$	106 \$	22 \$	14/11/16
DowDupont		Merger			1/09/17
ChemChina	ADAMA	19,98 Shekel	16,9 Shekel	3,08 Shekel	28/12/10

The Seeds and Crop Protection markets have been through an intense M&A activity in the last years. The companies in the sector expense a lot in R&D (around 10% of Sales) seeking new differentiating products that once patented benefit from competition protection and thus, profit margin improvement, leading companies to look to M&A to: reduce costs through synergies; and practice higher prices through reduced competition. There are 3 major deals (directly including 5 of the “Big 6” and indirectly BASF, besides many other minor players that have the opportunity to acquire assets that regulatory agencies demand to be sold) that seriously impacted the sector: Dow Chemical-Dupont merger (completed), ChemChina acquisition of Syngenta (completed) and Bayer acquisition of Monsanto (to be completed).

The state-owned ChemChina acquired Syngenta in April 2017 on a 43\$ billion deal (the largest acquisition of a Chinese company ever) which signals the new direction of China towards Agriculture and Food Nutrition marked by the development of GM seeds and the increase usage of chemicals in crop production, having as goal modernize and improve the productivity of Chinese agriculture to meet growing food demand in China. ChemChina had already bought, in 2011, a considerable global player in Crop Protection and largest generic pesticides producer, the Israeli Makhteshim Agan (rebranded ADAMA) for 2,4\$ billion. In order to approve the deal (Syngenta-ChemChina), regulators demanded some crop protection assets from ADAMA and Syngenta to be sold which were recently (Oct 2017) acquired by the Nufarm by 0,54\$ billion. Before the ChemChina offer for Syngenta, Monsanto had launched an offer, in 2015, to acquire Syngenta for 45\$ billion which was rejected.

In August 2017, Dow Chemical and Dupont merged, after a 2-year process. As regulatory requirements, Dow sold its corn seed business in Brazil to

the Chinese fund CITIC Agri for 1,1\$ billion and Dupont swap a part of its crop protection business with FMC in exchange for most of FMC's Health and Nutrition business. Also, FMC sold its herbicide business in Europe to Nufarm for 90\$ million to get regulatory approval. FMC had already acquired in 2015 Cheminova, a Danish crop protection company, by 1,8\$ billion. In seeds segment, Dupont, through his Seeds subsidiary Pioneer, already sells more than Syngenta, but in the crop protection segment the merged DowDupont sales will still be lower than Syngenta's.

The Bayer-Monsanto deal is still pending final approvals but it is expected to be finished in the beginning of 2018. The deal (66\$ billion) will create the largest seed and crop protection company in the world replacing Syngenta as world leader. As regulatory consequences, Bayer has to sell some assets and BASF signed an agreement with Bayer to acquire seeds and non-selective herbicides assets from Bayer on a 7\$ billion deal.

Smaller players have been growing in both segments, while "Big 6" companies decreased sales in the last two years. Although some of the players like Nufarm and FMC took the opportunity of the M&A mega deals to acquire assets, other smaller companies in the seeds segment with low financial capacity to buy assets from those top players, like Vilmorin, KWS Saat and Rijk Zwaan entered into licensing agreements with Syngenta to share some patents and knowledge of Syngenta in exchange for an initial payment plus royalty income generated from new sales.

Valuation

Price Target, Total Return and Sensitivity Analysis

My estimate of Syngenta share price is of 77,84\$ as of December 2018 which compares with the current share price of 92,84\$ as of 29 December 2017, which results in a 16% negative capital gain. Expecting a 2\$ dividend per share in 2018, the total return over the 12 month period is expected to be -14%. Therefore, my recommendation is to SELL. The stock is currently overvalued due to the ChemChina acquisition of Syngenta which implied an high takeover premium. Also, the free float of the company is about 2% therefore the low supply of shares difficult price going down to its fair value.

DCF

USD millions	2016	2017	2018	2019	2020	2021	2022
Unlevered Operating FCF	1 684	2 473	995	1 040	1 137	1 241	1 319
Value from Operations	32 664	32 456	33 711	35 009	36 300	37 576	38 863
Non Operating Assets	123	124	132	141	150	159	169
Enterprise Value	32 787	32 580	33 844	35 150	36 450	37 735	39 031
Net Debt	2 593	2 576	2 676	2 780	2 882	2 984	3 087
Non Recurrent Provisions	1 020	631	671	715	760	806	855
Non Controlling Interests	21	20	19	20	21	23	25
Preferred Stock	0	0	0	0	0	0	0
Share compensation schemes	214	276	335	397	465	537	614
Lawsuit		1 700	1 700	1 700	1 700	1 700	1 700
Common Equity	28 939	27 377	28 443	29 538	30 620	31 684	32 751

The method used to calculate the value from Sygenta Operations was the DCF method – the sum of all discounted forecasted unlevered operating FCF's- to which I summed the value of Non Operating Assets and subtracted Debt & Debt like (Net Debt, Non Operating Liabilities, Non Controlling Interests, Share compensation scheme and recent Lawsuit settlement) items to get Common Equity. The number of shares outstanding is 462 891 million and no share issues or repurchases are expected. The share price is given by the division between Common Equity and Shares Outstanding. Both Non Operating Assets and Debt & Debt like items market values were assumed equal to book values. Using the DCF, I discounted the Unlevered Operating FCF's for an explicit forecast period of 5 years (2017-2021) and the perpetual value of operations as of 2022 at the estimated 6,29% WACC. The 3,42% growth rate of Operating FCF's was based on my estimates of the historical return of Syngenta on new invested capital (RONIC) and the Reinvestment Rate (RR).

	2015	2016	2017F	2018F	2019F	2020F	2021F	2022F
NOPLAT	1 678	1 527	1 565	1 666	1 778	1 892	2 007	2 130
Operating Invested Capital	11 733	11 461	10 553	11 224	11 962	12 717	13 483	14 294
Investment in NWC	832	106	-770	288	317	324	329	348
CAPEX	214	266	369	878	948	992	1 034	1 096
D&A	-539	-528	-506	-495	-527	-561	-597	-633
ROIC	14%	13%	14%	16%	16%	16%	16%	16%
RONIC	-19%	-14%	10%	-25%	10%	9%	9%	9%
RR	30%	-10%	-58%	40%	42%	40%	38%	38%
Growth rate	-6%	1%	-6%	-10%	4%	4%	3%	3%

A sensitivity analysis, shown on the table below, was done to assess the impact of changing WACC and the growth rate of unlevered operating FCF's on the Share Price. Both parameters were added and subtracted 0,5 percentual points twice.

Share Price \$		WACC				
		5,29%	5,79%	6,29%	6,79%	7,29%
Nominal Growth Rate of FCF	2,42%	80,37	66,69	56,56	48,74	42,54
	2,92%	98,24	79,06	65,58	55,59	47,9
	3,42%	125,7	96,68	77,78	64,49	54,65
	3,92%	173,26	123,75	95,14	76,51	63,42
	4,42%	275,58	170,63	121,83	93,63	75,27

Growth in Perpetuity

The main drivers of growth for Syngenta are: inputs (seed and crop protection) cost increases per hectare which are expected to grow at USA forecasted IMF inflation; area cultivated increase of the crops in analysis which are forecasted by FAO to also grow; EBIT margin improvement to 16% (11% as of 2016) in 2018 after conclusion of AOL (accelerated operating leverage) program. The RONIC is forecasted to be 9% 2020 onwards which is above 6,29% WACC, therefore Syngenta can generate a return on the capital invested superior to its cost, because Syngenta development of new seeds and crop protection products is protected by patents, therefore, Syngenta can mark higher prices than its cost, as competitors with such patents do as well. Such premium won't be perpetual as more firms enter the market the increased competition will drive margins and returns on invested capital down, eventually equalling RONIC to WACC. In the short term, the combination of such patents and the market concentration resulting from the M&A activity will hold this premium.

Cost of Capital

The discount rate, the WACC, is constant in the future being assumed constant target Net Debt to Equity (market values) ratio, cost of equity and cost of debt. The cost of equity was derived from CAPM, therefore, to the 10-year yield on USA government bond (used as risk free rate) of 2,38%, I added the levered beta (measure of systematic risk) of the industry (1,1) multiplied by the market risk premium (MRP) of 3,8%. In the future, a constant Net Debt to Enterprise Value is assumed at 7%. Thus, the cost of equity for Syngenta is estimated to be 6,57%.

The MRP used was collected from *Corporate Finance, Third Edition, Berk and DeMarzo*, page 439, which is calculated for the period 1962-2012 using the S&P 500 excess returns compared to 10 treasury rates. To calculate the levered beta of the Company, I regressed monthly returns of Syngenta listed peers on monthly returns of MSCI world index between the end of 2012 and 2017 (60 observations per regression) which gave me the estimated equity beta of each company over the last 5 years. Based on the analysis of the confidence interval of Syngenta equity beta at 95% confidence level which is between 0,48

and 1,67, I choose the equity betas of the companies that I considered to be a good proxy of the Syngenta business (Syngenta, Monsanto, DowDupont, Bayer, UPL, BASF).

Company	Equity Beta	Lower Bound IC	Upper Bound IC	Unlevered Beta
Syngenta	1,08	0,48	1,67	1,02
Monsanto	1,03	0,61	1,44	0,88
DowDupont	1,26	0,83	1,69	1,05
Bayer	0,95	0,49	1,42	0,83
UPL	1,19	0,33	2,06	1,08
BASF	1,11	0,65	1,57	0,94
Sumitomo	1,13	0,44	1,82	0,60
FMC	1,71	1,15	2,27	1,37
Nufarm	0,64	-0,19	1,47	0,51
Platform	3,17	1,77	4,58	1,15
AMVAC	1,15	0,17	2,13	1,08
Vilmorin	0,67	0,21	1,13	0,43
KWS Saat	0,23	-0,21	0,67	0,22
Sakata	0,55	-0,16	1,26	0,62

The 2,12% cost of debt was computed by subtracting from the most recent long term corporate Syngenta bond (3,25%) the probability of default (1,64%) multiplied by 68,7% which is 100% minus the recovery rate (31,3%). The probability of default is based on Ba3 Moody's rating. Although Moody's currently rates Syngenta as Ba2, after the recent announcement of lawsuits settlement by Syngenta (1,7\$ billion), rating agencies are reviewing Syngenta credit rating which I expect to be downgraded to Ba3. Despite of that, Syngenta has a comfortable interest coverage ratio which according to my estimates recurrent EBIT is 11 times higher than interest expenses in 2018. The recovery rate is based on Moody's values for senior unsecured bonds.

Multiples	P/E	P/B	EV/EBITDA	EV/Sales
Bayer	18,90	2,64	7,99	2,03
Monsanto	25,22	9,97	15,35	3,96
DowDupont	22,64		13,00	1,07
BASF	19,31	2,46	8,95	1,67
Sumitomo	10,36	1,08	8,83	1,06
FMC	20,83	3,84	13,65	2,87
UPL Limited	18,84	4,45	13,45	2,25
Nufarm	147,97	1,85	7,84	1,18
Platform	238,14	1,02	14,12	2,15
AMVAC	43,42	1,99	14,16	1,91
Vilmorin	14,35	1,04	6,94	1,47
KWS Saat	19,08	2,41	12,37	1,84
Sakata Seed	24,21	1,58	14,81	2,31
Average Big 6	21,56	2,86	11,65	1,98

Syngenta	30,44	5,73	12,94	2,52
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Appendix

<u>Operating Cycle</u>	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Days of Inventory	236	251	213	219	210	226	226	226	226	226	226
<i>vs Monsanto</i>	160	149	180	187	182						
Days of Receivables	106	110	107	132	146	120	120	120	120	120	120
<i>vs Monsanto</i>	51	42	46	40	52						
Days of Payables		155	166	179	193	175	174	174	174	174	174
<i>vs Monsanto</i>		50	51	45	59						
Net Operating Cycle		205	154	171	162	171	172	172	172	172	172
<i>vs Monsanto</i>		142	176	182	176						

Liquidity

Net Working Capital to Sales	33%	37%	34%	40%	41%	35%	35%	35%	35%	35%	35%
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Profitability

Gross margin	48%	45%	45%	46%	47%	49%	49%	49%	49%	49%	49%
<i>vs Monsanto</i>	52%	51%	54%	55%	52%						
SG&A expenses to Sales	23%	21%	21%	21%	23%	23%	23%	23%	23%	23%	23%
<i>vs Monsanto</i>	18%	17%	17%	18%	21%						
R&D expenses to Sales	9%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%
<i>vs Monsanto</i>	11%	10%	11%	11%	11%						
EBIT margin	15%	14%	13%	12%	11%	14%	14%	16%	16%	16%	16%
<i>vs Monsanto</i>	23%	23%	25%	23%	18%						
Net Income margin	13%	11%	11%	10%	9%	11%	11%	12%	12%	12%	12%
<i>vs Monsanto</i>	15%	17%	17%	15%	10%						
FCF margin		3%	8%	6%	10%	15%	6%	7%	8%	8%	8%

Financial Leverage

Net Debt to Book EV	19%	22%	22%	25%	25%	26%	25%	24%	24%	23%	23%
<i>vs Monsanto</i>		-11%	42%	45%	63%						
Interest coverage	17	13	11	12	9	10	11	11	12	12	13
<i>vs Monsanto</i>		20	16	8	6						

Shareholders

Dividend Payout	43%	56%	64%	80%	88%	139%	66%	68%	69%	71%	71%
<i>vs Monsanto</i>	33%	33%	33%	41%	72%						
Earnings per Share	3,97	3,54	3,49	2,89	2,55	3,04	3,21	3,77	4,02	4,28	4,55
<i>vs Monsanto</i>	3,88	4,68	5,27	4,83	2,94						
Share Price \$ (31/12)	71	72	60	76	78						
<i>vs Monsanto</i>	86	108	112	76	103						
Price to Earnings	18	20	17	26	31						
<i>vs Monsanto</i>	22	23	21	16	35						
ROE	21%	17%	18%	16%	15%	19%	19%	20%	20%	20%	20%
<i>vs Monsanto</i>		20%	35%	33%	29%						

Financial Statements

P&L, \$ millions	2016	2017F	2018F	2019F	2020F	2021F	2022F
Crop Protection							
EMEA	2 862	2 889	3 034	3 193	3 355	3 517	3 688
North America	2 306	2 333	2 367	2 410	2 450	2 493	2 535
Latin America	2 860	2 918	3 001	3 086	3 177	3 265	3 363
APAC	1 543	1 543	1 622	1 720	1 815	1 906	2 006
Sales of Crop Protection	9 571	9 683	10 025	10 409	10 797	11 182	11 592
Seeds							
EMEA	973	981	1 085	1 200	1 317	1 437	1 564
North America	933	942	1 087	1 243	1 402	1 568	1 737
Latin America	448	459	530	602	677	752	832
APAC	303	304	425	559	702	851	1 012
Eliminations	-101	-102	-106	-110	-114	-118	-122
Sales of Seeds	2 556	2 583	3 021	3 495	3 984	4 490	5 023
Sales of Lawn and Garden	663	671	713	760	808	857	908
Total Sales	12 790	12 936	13 759	14 664	15 589	16 529	17 524
COGS	-6 760	-6 634	-7 054	-7 516	-7 989	-8 469	-8 977
Gross Profit	6 030	6 302	6 705	7 147	7 600	8 060	8 546
Income from associates and joint ventures	5	5	5	5	6	6	6
Marketing and Distribution expenses	-2 117	-2 157	-2 293	-2 443	-2 597	-2 753	-2 918
General and Administrative expenses	-813	-825	-878	-935	-994	-1 054	-1 118
Research and Development expenses	-1 299	-1 314	-1 397	-1 489	-1 583	-1 679	-1 780
EBIT	1 806	2 011	2 141	2 284	2 431	2 579	2 737
Statutory taxes	-401	-446	-475	-507	-539	-572	-607
Tax adjustment	122						
NOPLAT	1 527	1 565	1 666	1 778	1 892	2 007	2 130
Restructuring expenses	-407	-187	-187	0	0	0	0
Non Recurrent Taxes	90	41	41	0	0	0	0
Non Recurrent Profit	-317	-146	-146	0	0	0	0
Interest Income	181	194	167	176	185	195	205
Interest Expense	-200	-194	-193	-199	-204	-210	-215
Other financial expense	-19	-18	-18	-19	-19	-20	-20
Financial Result before taxes	-38	-18	-44	-42	-38	-35	-31
Tax Shield	8	4	10	9	8	8	7
Financial Result after taxes	-30	-14	-35	-32	-30	-27	-24
Net Income	1 181	1 405	1 486	1 745	1 862	1 980	2 106

BS, \$ millions	2016	2017F	2018F	2019F	2020F	2021F	2022F
Working Cash	256	259	275	293	312	331	350
Accounts Receivable	5 113	4 260	4 531	4 829	5 134	5 443	5 771
Inventories	3 884	4 100	4 359	4 645	4 937	5 234	5 548
Net Other Current Assets	646	653	695	741	787	835	885
Income taxes recoverable	189	0	0	0	0	0	0
Investments and Joint Ventures	170	172	183	195	207	220	233
Net Derivative and other financial assets	524	530	564	601	639	677	718
Deferred Tax assets	941	952	1 012	1 079	1 147	1 216	1 289
Deferred Tax Liabilities	610	617	656	699	743	788	836
Derivative and other financial liabilities	470	475	506	539	573	607	644
Trade Accounts Payable	3 338	3 276	3 483	3 711	3 945	4 182	4 433
Income taxes payable	526	532	566	603	641	680	721
Other Current Liabilities	1 174	1 187	1 263	1 346	1 431	1 517	1 608
Recurrent Provisions	305	308	328	350	372	394	418
Net Working Capital	5 300	4 529	4 817	5 134	5 458	5 786	6 134
PPE	3 298	3 128	3 327	3 546	3 769	3 997	4 237
Intangible Assets	2 863	2 896	3 080	3 282	3 490	3 700	3 923
Operating Invested Capital	11 461	10 553	11 224	11 962	12 717	13 483	14 294
Non Current Assets held for sale	29	29	31	33	35	37	40
Equity Securities	76	77	82	87	93	98	104
Defined benefit post employe asset	18	18	19	21	22	23	25
Non Recurrent Provisions	1 020	631	671	715	760	806	855
Non Operating Invested Capital	-897	-507	-539	-574	-611	-647	-686
Excess Cash	1 028	1 028	1 028	1 028	1 028	1 028	1 028
Financial Debt	3 621	3 605	3 705	3 808	3 911	4 012	4 115
Equity	7 971	7 470	8 009	8 608	9 223	9 852	10 521
Sources of Financing	10 564	10 046	10 685	11 388	12 106	12 836	13 608

FCF, \$ millions	2016	2017F	2018F	2019F	2020F	2021F	2022F
NOPLAT	1 527	1 565	1 666	1 778	1 892	2 007	2 130
D&A	-528	-506	-495	-527	-561	-597	-633
Gross Cash Flow	2 055	2 071	2 161	2 304	2 453	2 604	2 763
Investment in NWC	106	-770	288	317	324	329	348
CAPEX	266	369	878	948	992	1 034	1 096
Unlevered Operating FCF	1 684	2 473	995	1 040	1 137	1 241	1 319
Non Recurrent Profit	-317	-146	-146	0	0	0	0
Investment in Non Recurrent Invested Capital	79	390	-32	-35	-36	-37	-39
Unlevered Non Recurrent FCF	-396	-536	-113	35	36	37	39
FCF	1 288	1 937	882	1 075	1 173	1 278	1 358
Financial Result before taxes	-38	-18	-44	-42	-38	-35	-31
Tax Shield	8	4	10	9	8	8	7
Change in Excess Cash	155	0	0	0	0	0	0
Change in Debt	-109	-16	100	103	103	102	103
Share based compensation	66	62	59	63	67	72	77
Dividends paid	-1 040	-1 950	-988	-1 190	-1 293	-1 403	-1 490
Share repurchases	0	0	0	0	0	0	0
Other	-20	-19	-18	-19	-20	-22	-23
FCF	-1 288	-1 937	-882	-1 075	-1 173	-1 278	-1 358

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Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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