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Date: 10/01/2014	**Current price: 23.52 EUR**	**Recommendation: SELL**
Ticker: MELE-BE	**Industry: Semiconductor/Automotive**	**Target price: 18.30 EUR**

Market profile

Market Cap (EUR)	949.4M
Free float (%)	46,44%
52-week range (EUR)	12.00 - 24.69
30 Day average daily volume	32.026
As % of shares outstanding	0,08%
Shares outstanding	40.4M

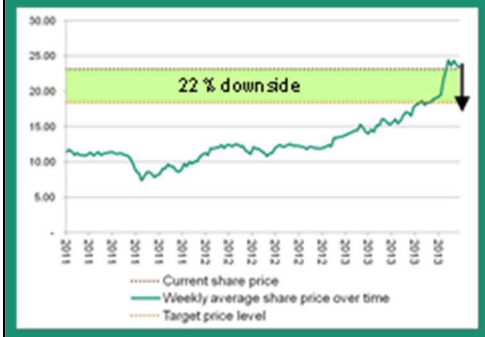
Dividend

Cash Dividend (in EUR)	0,70
Dividend yield	3,20%
5 Year Dividend Growth	3,13%

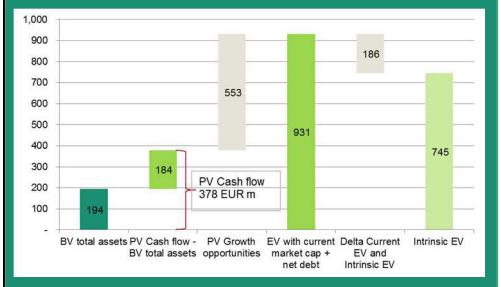
Ratios

Forward P/E ratio (2014e, team estimate)	18,8
Forward P/E ratio*	14,7
P/CF*	11,7
EV/EBITDA*	12,7
Book value per share*	4,24
P/B*	5,5
P/S*	3,57

Stock price development



Value bridge to intrinsic EV



Sensitivity analysis

WACC \ Terminal Value Growth	0.5%	1.0%	1.5%	2.0%	2.5%
7.5%	21.3	22.6	24.1	25.9	28.0
8.5%	18.5	19.4	20.5	21.8	23.2
9.3%	16.7	17.4	18.3	19.2	20.3
10.5%	14.6	15.1	15.8	16.5	17.2
11.5%	13.2	13.6	14.1	14.6	15.2

** as of 10/01/2014, 2014 consensus estimate*

Melexis – Microelectronic Integrated Systems

Highlights

Our fundamental analysis and valuation indicate a SELL:

We issue a sell recommendation with a **target price of 18.30 EUR**. Despite having a good underlying business model, we believe Melexis stock is overvalued at the current level of 23.52 EUR. Our DCF model points to an intrinsic value forecast of 18.30 EUR per share representing a 22% downside from the current share price. In addition, we validated our sell recommendation with several other valuation methods (trading and transaction multiples, sum of the parts valuation (Appendix C.XV) and a Monte Carlo free cash flow model).

Main price drivers for our cautious outlook for Melexis:

- **Margin pressure for Melexis' automotive business segment:** Pressure on margins increases as several industry heavyweights are planning to enter the automotive semiconductor industry, increasing competition. Additionally, rising salary costs negatively impact margins.
- **A negative outlook for Melexis' non-automotive business segment:** The revenues generated from the company's non-automotive segment (16% of sales) have been continuously declining since 2006. We do not believe in a turnaround of this segment.
- **The halt in the share repurchasing programme as a signal for the stock's overvaluation:** Especially with ample cash on Melexis' balance sheets, a halt in the share buyback program can potentially be seen as a signal that the company's management believes Melexis' share is overvalued.
- **Further conditional drivers to the downside:** Realization of risks such as the war for engineering talent, quality issues, conflicts of interests due to the corporate structure and currency fluctuations are further conditional drivers to the downside.

Main risks to our target price:

Our SELL recommendation is based on our revenue growth forecast for the company's automotive and non-automotive business segment and the respective margins. A strong increase in sales or margins could invalidate our intrinsic value estimate.

Forecast summary

	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
EUR Millions								
Revenues	231	247	266	288	311	337	363	391
EBITDA	66	71	71	75	79	84	89	93
Net income	46	52	47	50	54	58	63	66
EUR per share								
EPS	1,06	1,28	1,15	1,25	1,34	1,45	1,55	1,64
Dividends	0,60	0,60	0,70	0,70	0,80	0,80	0,90	0,90
Returns (%)								
RoE	42,8	39,9	31,9	31,8	31,2	31,6	33,0	34,0

A. Business description – A 'fabless' semiconductor producing company

Melexis NV is an automotive semiconductor company – Melexis' mission is to *''provide innovative micro-electronics for our customers' challenges with a passion for achieving mutual success''*. The company designs, develops and tests advanced integrated semiconductor devices. The company's strength lies in creating and launching innovations and delivering zero-defect quality. A full SWOT-analysis can be found in Appendix **A.V**. Their core business focus is on producing electronics to make cars more energy efficient, safer and reliable. Melexis is an expert in designing and developing smart integrated circuits and sensors for automotive electronics systems. In particular, it is recognized as a world leader for the magnetic sensor devices, which are mainly based on the Hall Effect sensors (Appendix **A.IV**). Currently, they rank fifth in automotive sensor sales (Appendix **B.XIII**).

Company information	
Core industry	Automotive semiconductor
Headquarters	Ieper, Belgium
Founded	1988
Location base	America, Europe & Asia
Employees	>800

Figure 1: *Company information*
Source: *Annual report*

Melexis offers semiconductors in two sectors: Automotive and Non-Automotive – Their product portfolio consists of Sensors, Actuators, Wireless and Opto (Appendix **A.IV**). Besides the automotive industry (84% of sales), the company also focuses on non-automotive products (16% of sales) such as consumer, industrial and medical appliances products.

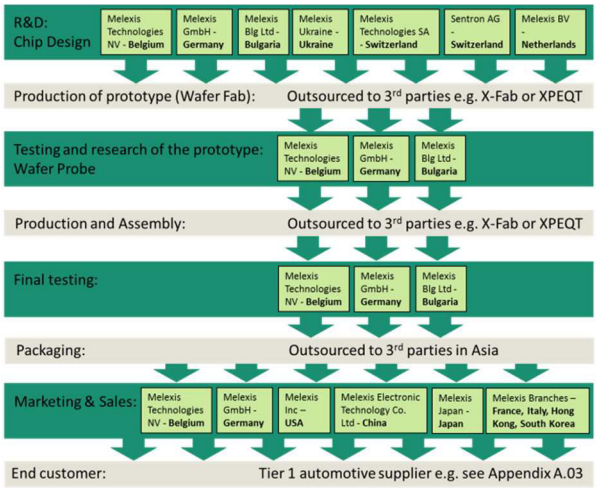


Figure 2: *Melexis value chain*
Source: *Company data, Team analysis*

Melexis' facilities are located in the USA, Europe and Asia – Melexis employs a 'fabless' business model, i.e. they outsource the fabrication of their products to chip manufacturers (Appendix **A.VI**). They have offices and outsourced foundries in Europe, North-America and Asia (Appendix **A.I**, **A.II**). The company has a worldwide customer base. Melexis does not directly sell to end customers. Instead, Melexis sells its products to component suppliers on different tiers, which then deliver their products to the car manufacturers. Examples of the company's top customers are Bosch, Samsung, Continental, CTS and LG Innotek (Appendix **A.III**). Furthermore, the company sells most of its products mainly through direct sales people.

Focus on innovation and non-automotive segment – Melexis continuously focusses on innovation in their product development and renewed focus on non-automotive products. To achieve this goal Melexis' management invests in research activities, developing sustainable products and making selective acquisitions (Appendix **G.I**). Going forward Melexis is continuing to invest in R&D to maintain their product edge. Furthermore management wants to strengthen the non-automotive business segment. They want to sell their automotive products to non-automotive customers as well. Another benefit of selling to non-automotive customers is to use the shorter product cycles to field test their developments for the automotive segment. Managements aims for a target of 75% automotive to 25% non-automotive in sales. Also, as part of their growth strategy they regularly evaluate potential acquisitions of businesses, technologies and product lines.

B. Industry analysis – Melexis competing in two sub segments of the semiconductor industry

Melexis has two main business segments with exposure to the **automotive semiconductor industry** and **non-automotive semiconductor industry,** respectively. As the majority of Melexis' sales in 2012 (around 84% of total sales) were generated by the automotive business segment, our analysis will mainly focus on the automotive semiconductor industry.

Automotive industry – Melexis will outperform the industry

Melexis outgrew the automotive semiconductor market – The automotive semiconductor industry grew with around 6% p.a. from 2006 to 2012 to a total of 25.5 USDb. Melexis outgrew the market with 7% p.a. during that time period, acquiring a total market share of 1% by end of 2012. However, during the financial crisis in 2009, Melexis underperformed the industry showing greater cyclicality in automotive sales.

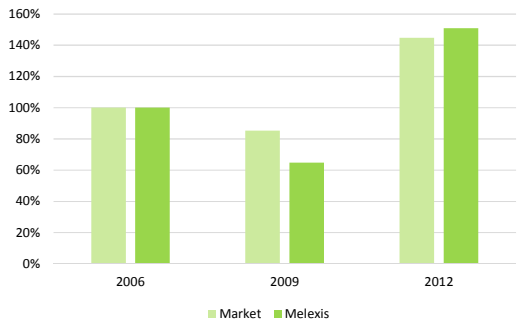


Figure3: *Historic sales development semiconductor automotive: Industry and Melexis,*
Source: *Gartner, Team analysis*

"Given the possible impact on passenger safety, product quality is clearly expected to be very high (zero defect) in the automotive industry."

Rick Clemmer, President and CEO of NXP Semiconductors

Customers with a high sensitivity to price and quality – Main customers in this segment are automotive suppliers and car manufacturers. These companies are highly price sensitive and rather concentrated, putting a lot of price pressure on the industry. The concentration manifests itself in many automotive semiconductor companies having single customers compromising more than 10% of total sales. Moreover, the top ten customers often account for more than 50% of total sales. Besides, customers demand a very high quality with a zero defect tolerance as the costs of a call back to the customers' business are extremely large.

Chip-producers suffer from overcapacity – The main suppliers to the automotive semiconductor industry (including manufacturers delivering tailor-made chips to Melexis) do not have pricing power as there is production overcapacity with utilization rates of foundries around 88% as of 2012 (Appendix **B.VII**).Contrary to that a new supplier needs between one and two years of training to get to the required quality level of zero defect. Hence, switching a supplier tends to be rather costly and time consuming, even though there is enough capacity.

Attractive growth rates driven by emerging markets and increasing electronic content per car – Going forward we expect the automotive semiconductor industry to grow with 8% p.a. until 2018, driven by two factors: growth in car sales and growth of electronic content per car. Growth of car sales stems mainly from strong demand in emerging markets together with a pickup of demand in developed markets. This growth, estimated to be between 8-9% p.a. in the emerging market and 2-4% in the developed market, leads to an overall expected growth in car sales of around 5% (Appendix **B.VIII**). This automotive sales growth translates into even higher sales growth for the automotive semiconductor industry as the electronic content per car is expected to substantially rise in the future (by 2030, expenditure on electronic components is expected to increase to 50% of total costs, Appendix **B.IX**). The expected increase in car sales combined with a higher expected future electronic component content per car leads to a growth expectation of 7-9% p.a. for the automotive semiconductor industry. This growth assumption is in line with management expectations for the market (Appendix **C.IX**).

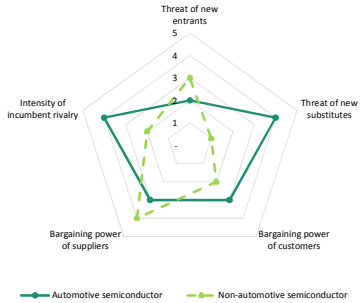


Figure 4: *Porters 5 forces (for more details see Appendix **B.XI**)*
Source: *Team analysis*

"The current forecast for the growth for the automotive semiconductor market is 7% to 8% p.a."

Bernd Schniggenfittig, Administrator at World Semiconductor Trade Statistics

Higher electronic content per car bound to increase driven by regulation and customer expectations – The trends underlying the growth in electronic content per car are regulation, sustainability, safety, e-mobility and convenience. Regulation, e.g. the Euro 6-norm in Europe and China and also regulative standards in the USA, is setting forth new sustainability and safety standards, namely tougher emission targets and safety ratings for cars (Appendix **B.XII**). The ongoing e-mobility trend, e.g. electronic powered vehicles and intelligent infrastructure, also requires more electronic measurement systems. Lastly, the increasing demand of customers for a better and more comfortable driving experience requires the use of more electronics to improve entertainment and driving features

<u>Automotive competitors –</u> <u>High margin and growth expectations attract new competitors</u>

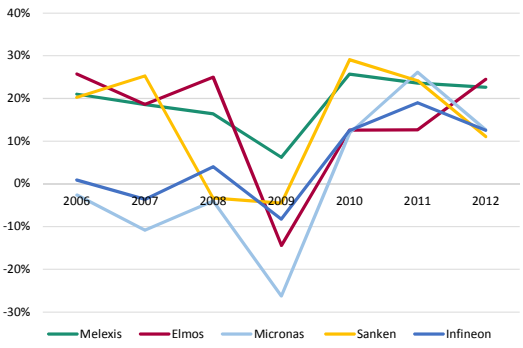


Figure 5: *EBIT-Margin,*
Source: *Factset, Team analysis*

Automotive semiconductor companies hit hard by the crisis – The most important companies in the automotive semiconductor industry are Renesas Electronics, Infineon Technologies, STMicroelectronics, Freescale Semiconductor and NXP Semiconductor, accounting for 37 % of total sales of the whole market in 2012. However, Infineon, Micronas, Elmos and Sanken (including its subsidiary Allegro) are a better comparable to Melexis due to more similar product offerings and client base (Appendix **B.I**, **B.II**, **B.III, B.V**). These four companies, ("the core peer group"), are not only good comparisons to Melexis due to their involvement in the automotive semiconductor business, but also for Melexis' non-automotive business segment as the core peer group companies also cross-sell their products to other, non-automotive customers. All of these companies mainly use their own factories to produce their chips. The four core competitors have been hit hard on a margin and sales basis in 2009 as global semiconductors sales and automotive sales plummeted. In comparison, Melexis performed quite well during that time, due to its fabless business model. Post crisis the industry was able to recover to its former margin level. Especially Infineon and Micronas closed the margin gap to their competitors due to restructuring and a focus on profitable segments. The market concentration is low with a HH-Index value of 365 (Appendix **B.VI**), indicating a segmented market without a dominant player.

Melexis' return on assets beats its peer group – Melexis has delivered a higher RoA compared to the core peer group and the rest of the industry every year, except for 2009. This is due to a higher asset turnover of the fabless business model (Appendix B.**IV**). The whole industry has been deleveraging since 2009, a development, which can also be seen at Melexis as well. The resulting adverse effects on Melexis' return on equity have been mitigated by an increase in asset turnover. The core peer group did not perform as well with regards to RoE, losing three percentage points to fall at 15% in 2012.

Competition in automotive semiconductor expected to increase – The high anticipated growth rate in the automotive semiconductor segment combined with the good RoA of the fabless business model are highly likely to attract new competitors to (re-)enter this segment. For instance, industry giants, such as Samsung and LG Electronics, deem the automotive segment as their new growth engine. This is especially worrisome for a small player such as Melexis, since both companies have a considerable intellectual property portfolio, considerable experience in producing and selling electronic products and economies of scale and scope. Samsung has also strong ties to the automotive industry, which it could leverage in the future. The entrance of both companies will probably increase the incumbent rivalry and competitive pressure as well, which has been low due to the high growth in the past.

Non-automotive industry and competitors – Melexis cannot benefit from its superior product quality in a price-driven market

Melexis underperformed in an overall stagnant non-automotive market – The relevant non-automotive markets (Consumer, Industry and Medical) have seen no growth from 2006 to 2012, ending with a total sales volume of 68.8 b USD in 2012. Nevertheless the total market sales fluctuated strongly with the economic cycles. Melexis' sales in that segment declined by 8% p.a. during the same time period, with its market share going down from 0.12% to 0.07%.

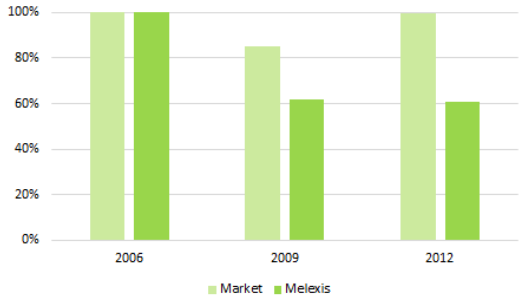


Figure 6: *Historic sales development semiconductor non-automotive industry and Melexis*
Source: *Gartner, Team analysis*

Customers can exert pressure on Melexis to lower prices – Main customers in this segment are mostly consumer electronics producers or their respective manufacturers, such as Philips, Bosch, Samsung or Foxconn. Similar to the automotive industry, there is a high concentration among buyers of non-automotive electronic components. Thus, due to the customers' price sensitivity and their demand for high volumes, margins in the industry are going to be under severe pressure. Unfortunately, companies such as Melexis cannot distinguish themselves through high quality (as the quality aspect is not as important as it is in the automotive industry) but mainly by offering the best price.

Chip-suppliers to Melexis suffer from the same overcapacity – Suppliers to this market are subject to the overcapacity issue and suffer from being easily replaceable as their products are more like commodities. This is due to a lower quality standard and lower quality requirements. Product cycles in this industry are shorter, reaching production peaks within 1 to 3 years.

Growth expectations for industrial applications at 8%p.a., while consumer electronics remain at about 1.5%p.a. – Going forward, we expect the market for consumer electronics to remain nearly flat ranging from 1-2% p.a. until 2018. Our prediction is based on the fact that the market will likely face extreme price pressures from customers and fast development cycles. The industry and medical market is most likely to experience an acceleration in growth up to 8%, driven by the increasing healthcare costs, which are boosting the demand for smart low cost home based healthcare medical devices and the growing urbanization in Asia and Latin America (Appendix **B.X**). The mixed predicted growth of the market, increasing specialization and product concentration increase the competition in the non-automotive industry. New competitors are unlikely to emerge due to the aforementioned reasons.

C. Financial analysis – Cyclical earnings, but with sound financial position

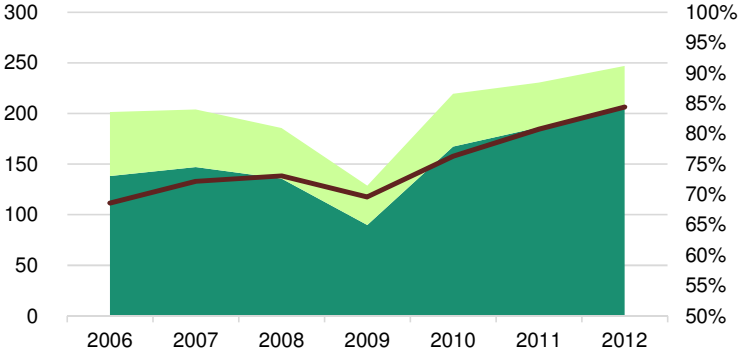


Figure 7: *Historic segment sales evolution*
Source: *Annual reports, Team analysis*

Strong cyclicality in all segments – Sales grew 3% p.a. from 2006 to 2012, above the relevant industry average during that time (Appendix **C.II, C.IV**). These numbers are adversely affected by the crisis of 2008/9, where sales shrank by 37% compared to 2007, showing the strong cyclicality in the automotive industry. Sales in the automotive segment retracted by 39%, while the non-automotive segment shrank by 31%. The sharper decrease in sales in the automotive business segment during 2008/2009 shows the strong cyclicality inherent in the whole business of

Melexis, with the non-automotive segment being less exposed to adverse macroeconomic movements. Sales more than recovered in 2010 due to a global customer base and a strong product portfolio. After 2010, sales grew 6% p.a. overall, with the automotive segment growing by 11% p.a., while sales in the non-automotive segment actually decreased by 14% p.a.. The positive growth in the automotive segment was driven by strong growth for some product areas, while others like Opto decline. So far 2013 looks promising with sales in Q3 exceeding the Q3 2012 numbers.

Profitability suffers as costs outgrow sales – Profitability has been on high level historically, partially due to the advantages of Melexis' fabless business model. During the crisis, profitability was severely affected due to sales declining more than costs such as R&D and SG&A. The strong profitability recovery in 2010 is due to pent-up demand accumulated in the crisis. Since 2010, EBIT and income margin are in a decline as costs have been rising 2% faster than sales depicting Melexis' effort to gain market share in a competitive environment.

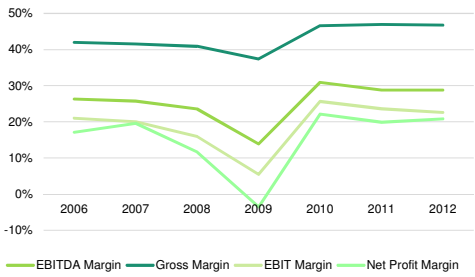


Figure 8: *Historic margin overview*
Source: *Annual reports, Team analysis*

SG&A and R&D expenses have outgrown sales since 2010 – Even though the gross margin has been stable around 47% since 2010, R&D and Selling expenses grew by 14% and 15% p.a., mainly driven by an increase in salary expenses of 15% p.a. (Appendix **C.VI**). Salaries account to 55% of costs excluding purchase and depreciation costs. Furthermore other costs have been growing with 9% p.a. since 2010. To protect its margins Melexis needs to grow its revenue faster than production cost rise or alternatively, find ways to limit the increase in costs (the latter is very hard to achieve due to Melexis' dependence on highly paid engineers for its product development process).

Figure 9: *Historic salary and headcounts*
Source: *Annual reports, Team analysis*

Salaries with 15% CAGR since 2010 – The increase in salaries is attributable to a considerable raise in headcount by 9% p.a. and an increase of average salary by 6% p.a. since 2010. As sales grew by 6% p.a., this leads to a decrease in EBIT margin from 25.7% to 22.8% in the time period of 2010 to Q3 2013. With the continuing hiring of engineers and Melexis need to compete in the "war" for talented engineers, we expect the margin compression to continue.

Return on Assets has been stable due to increase in Asset turnover – Our Du Pont Analysis (Appendix **C.V**) shows that the decreased profitability is being partially offset by an increase in asset turnover and changes in tax rates to keep the negative change in ROA tolerable at 1% since 2010 to 2012. ROE, based on book equity and adversely affected by the balance sheet-strengthening delivering of Melexis, has been shrinking from 51% to 40% during that time period.

Strong cash flows adversely affected in downturn – Operating and free cash flow have been growing by 7% and 8% p.a. since 2006 (since 2010, Melexis has seen even higher operating and free cash flow growth of 11% and 8% p.a., respectively, Appendix **C.III**). Both were affected as well during the crisis with a decrease of 42% and 53% from 2007 to 2009, even though the effects were partially mitigated by a decrease of working capital. As the business situation deteriorated in 2009, Melexis did not pay any dividends that year and also kept the share buybacks to a minimum

Melexis has a sound financial position – Net debt has been reduced to 11.7 EURm in 2012 from its peak of 68 EURm in 2009, adding stability and a decreased likelihood of default to Melexis, a positive signal for a company with cyclical earnings and cash flows. The company does not disclose a target capital structure. The current ratio above 1.8 (including the current portion of long term debt) and interest coverage ratio based on EBIT of 32.4 for year 2012 indicate a strong balance sheet. End of 2012 Melexis displays a solid Altman Z-Score of 5.1, indicating a low risk of bankruptcy for the coming two years (Appendix **C.I**, **C.VIII**).

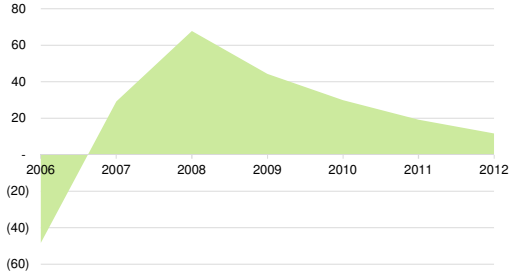


Figure 10: *Historic net debt development*
Source: *Factset, Team analysis*

<u>Financial Forecast –</u> <u>Melexis stays on a growth path</u>

Total sales is expected to grow with 7.9% p.a. until 2018 – We expect the market for automotive semiconductors to rise by 7-9% p.a. till 2018. Our growth forecast is based on strong demand for cars in the developing world and an increase in semiconductors per car. We expect Melexis' automotive segment to grow above the market as it has done in the past with 11.6% p.a. from 2010 to 2012. For the non-automotive segment, we forecast the long-term negative trend in sales to continue, but at a slower pace. This is mainly due to our prediction of a slight improvement for the prospect of the non-automotive segment due a positive trend in the industry semiconductor market and a renewed strategic focus on the non-automotive segment by Melexis' management. 2013 H1 statements of Melexis indicate a

10% decline for that segment this year. Until 2016 this decline should flatten out to -4% p.a. This leads to a growth estimate of total sales of 7.9% p.a. from 2013-2018.

History vs. Forecasts	2006 - 2012	2013-2018	
Sales growth	3,5%	7,9%	CAGR
automotive	7,1%	9,7%	CAGR
non-automotive	-8,0%	-6,0%	CAGR
Gross margin	43,4%	45,2%	average
SGA and R&D growth	6,1%	9,0%	CAGR
EBIT Margin	19,2%	20,2%	average
Debt interest rate	5,3%	5,6%	average
Tax rate	12,4%	12,5%	average
Net income margin	15,4%	17,3%	average

Figure 11: *Key forecasts for Melexis*
Source: *Team estimates*

Stable gross margin on a high level and decreasing EBITDA margin – We anticipate a stable, high gross margin going forward as Melexis has delivered a stable average gross margin of around 46% historically and the negotiation position of its suppliers is rather weak. However, we expect intensifying R&D competition and the war for talent to drive salaries up. Besides, we forecasts other costs to grow in line with inflation leading to 9% increase in R&D and SGA costs p.a. (which is below the historically realized 14% p.a.). Melexis with its focus on research and quality needs the best and brightest minds in its industry to remain competitive. Hence, cost cutting measures with regard to employees' salaries could threaten this competitive edge. As we expect sales to increase by 7.9% going forward, the faster growing costs at 9% p.a. lead to a decline in EBITDA margin from 26,6% in 2012 to 23.9% in 2018.

Debt stays stable, pay-out ratio rises to 92%and share buybacks are not conducted – As management does not give any guidance with respect to its desired capital structure, we assume the current level of total liabilities of 32% of book equity to be maintained going forward. Despite the floating nature of the outstanding debt, we assume stable interest rate payments as Melexis hedges parts of its exposures to foreign currencies and interest rate changes. Additionally, the dividend pay-out ratio is expected to rise from 51% in 2012 to 92% in 2018 (which equals a dividend growth rate of 8% p.a. and is within the historic pay-out range of 0% to 115%). In our DCF model, we forecast no share buy backs in the future, as Melexis stated in its earnings calls that it won't buy back any shares in case the share price is above 12 EUR. Through the increase in dividend pay-out, we account for the stop of share buybacks.

CAPEX level to maintain operations – Despite higher investments in buildings in Ieper in 2012 and 2013, Melexis' investor relation gave a guidance for CAPEX and depreciation during the company visit of around 16 EURm in total, growing at 1.5 % p.a. We implemented this guidance in our model as even strong growth in the future will not require substantial investment in our opinion due to Melexis' fabless business model.

Terminal growth of 1.5% with 23.9% EBITDA margin – The terminal value is estimated using the Gordon Growth Model. In the long run, the company will return to a low growth rate as the industry matures and increasing competition from new entrants drives growth for incumbents down (Appendix **D.XI**).

D. Valuation overview and DCF-Valuation – The result of our base case valuation is 18.30EUR per share

Figure 12: *Football field*
Source: *Team analysis*

We defined a bear, a base, and a bull case for our DCF valuation in order to capture the risks and to illustrate different possible intrinsic values. Moreover, we used various other valuation methods to get a bigger picture (Figure **12**) and to check the plausibility of our DCF values. A detailed description of each case can be found below and in the appendix **D.V**, **D.VI**, **D.VII**, **D.VIII**. Additionally we compared Melexis' PEG-Ratio to its peers indicating a clear overvaluation (Appendix **D.XVI**).

Free cash flows estimated between 35 EURm and 65 EURm annual for the next years – Since Melexis has just recently invested in a new headquarter in Belgium, the Melexis' management estimates a CAPEX requirement of around 16 EURm, which also covers depreciation. Hence, we assume in our forecast the CAPEX to equal the depreciation and modelled a CAPEX growth of 1.5% p.a. in the future. For the calculation of the NOPLAT and the WACC, we used an effective tax rate of 12.5%, taking the mid-range of Melexis management's guidance with respect to the tax rate of between 10% and 15%. A more detailed calculation of the fixed assets, net working capital and net debt can be found in the appendix **D.II**, **D.III** and **D.IV**.

WACC of 9.3%is calculated after an in-depth analysis of each parameter – To calculate the cost of capital, we used the CAPM framework in order to discount all future cash flows. Figure **13** displays all the parameters used in the WACC calculation. Moreover, the sensitivity analysis in figure **14** shows the impact of the components of our WACC estimate, namely risk free rate, beta, market risk premium and cost of debt, on our intrinsic share price forecast. The underlying sensitivity tables are located in the appendix **D.IX**. On the right side of the sensitivity tables, the lower bound, base case and upper bound are listed. For our base case, we used the 30-year Belgium government bond and regressed the weekly stock returns of Melexis against the MSCI-world index for the last four years to estimate beta. As academic research shows a higher risk for small cap companies, we included a small cap risk premium of 0.5% in our WACC calculation. Even though the company management aims to further decrease the D/E ratio, we used the most recent D/E ratio using market values.

Risk free rate	3.5%
Beta	1.14
Market risk premium	5.0%
Other risk premium	0.5%
Cost of equity	**9.7%**
Pre tax Cost of debt	5.6%
Tax rate	12.5%
Post tax Cost of debt	**4.9%**
D/E ratio	10.0%
WACC	9.3%

Figure 13: *WACC*
Source: *Company data, Team analysis*

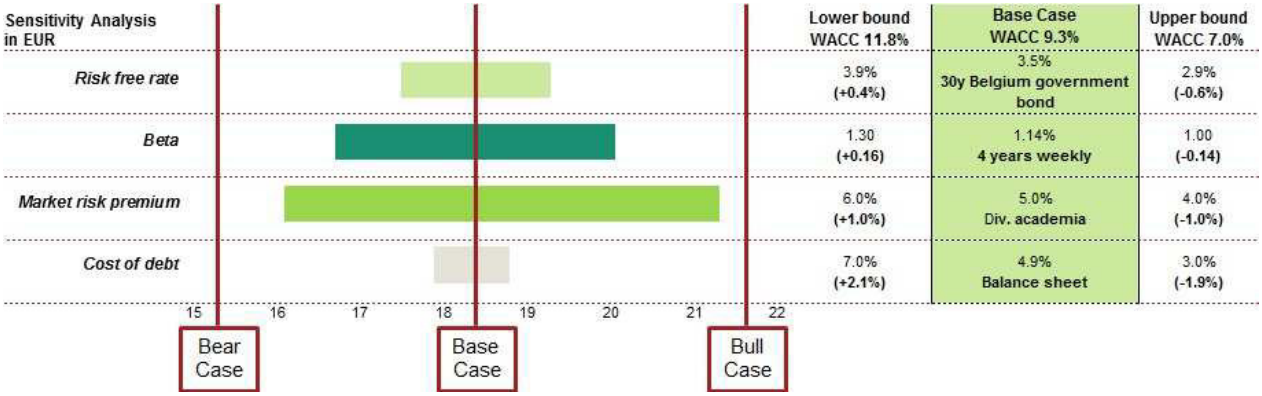


Figure 14: *WACC-Sensitivity Analysis in EUR*
Source: *Company data, Factset, Damodaran, Bloomberg, Team analysis*

Trading multiples – using trading multiples from Melexis' peer group, the range of intrinsic value forecast is between 8 EUR and 18 EUR per share

After comparing Melexis to its competitors, we considered the following companies as most suitable for our valuation through trading multiples: Micronas, Elmos and Infineon Technology. The result was a Median EBIT-multiple of 12.9x and Median EBITDA-multiple of 5.5x. A detailed analysis with all competitors can be found in the industry analysis section and in the appendix **B.V**. In our opinion, using trading multiples as a valuation method is more applicable than using transaction multiples as transactions occur less frequent and transaction prices incorporate a takeover premium.

Transaction multiples – looking at the 4 most representative deals, we calculate an intrinsic value range of between 15.10 EUR and 23.20 EUR

This range results from the median of the EBIT and EBITDA multiples of those 4 past transactions. However, in our opinion, the transaction multiples are an inferior valuation technique in case of Melexis, as the company is held by one large shareholder company, Xtrion, which is not willing to sell Melexis and thus, the probability of Melexis getting acquired is rather small (Appendix **E.II**) The transaction multiple analysis supports our sell recommendation, since this range is similar to our DCF valuation range and should be seen as the upper value bound. Further information on the deals considered for this valuation can be found in the appendix **D.XII**.

Sensitivity analysis – The **four** main value **drivers** show their material impact on the final value

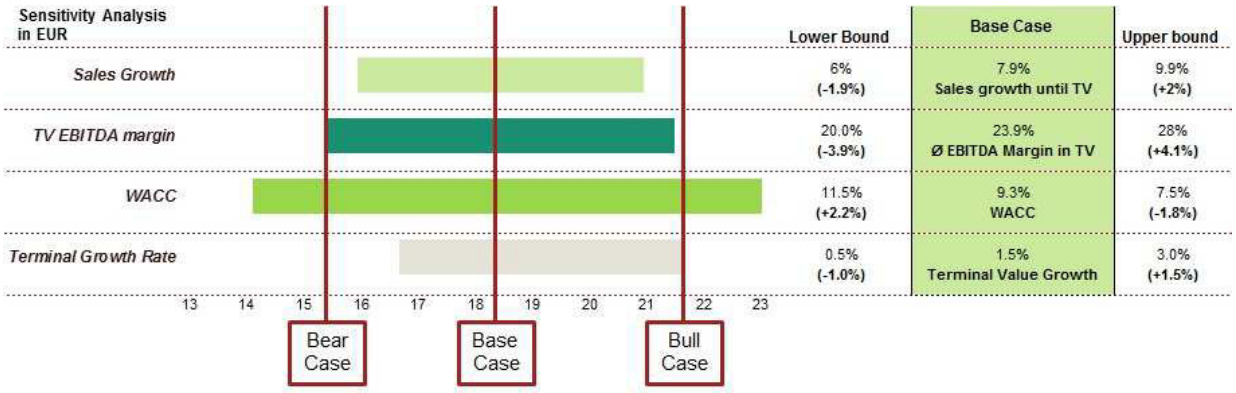


Figure 15: *Sensitivity Analysis in EUR*
Source: *Team analysis*

As it is shown in figure **15**, the main drivers of the value have a large impact on the final intrinsic value. Based on our business and segment analysis, industry analysis, and risk analysis, a 8% growth for the next four years and a 1.5% growth rate for the terminal value are most realistic. For the EBITDA margin in the terminal value, we used margin of the last forecasting year 2018. There is a further discussion on the matter of decreasing margins in the financial analyse

section. The specific values per share from the sensitivity analysis for each driver are illustrated in tables within the appendix section **D.X**.

Monte Carlo simulation – there is a 94.25% probability of the expected future Melexis share price being below the current share price

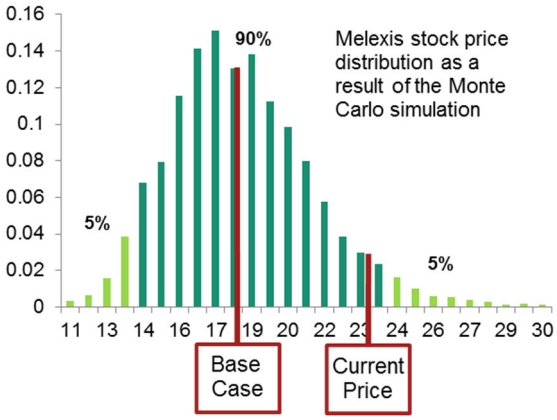


Figure 16: *Monte Carlo simulation*
Source: *Team analysis*

We used a Monte Carlo Free Cash Flow to further analyse the uncertainty inherent in our input factor estimates. Figure 16 shows Melexis' stock price distribution based on our Monte Carlo FCFF model. On the x-axis, possible stock price values are displayed, while the y-axis shows probability the values of the one the horizontal axis will occur. Given the assumptions discussed in Appendix **D.XVII**, the expected intrinsic value of Melexis' share is 18.63 EUR, validating our sell recommendation. According to our simulation, Melexis' intrinsic value ranges between 14.39 EUR and 23.89 EUR with a 90% certainty. Expressed differently, the likelihood that the expected future share price is above the current share price of 23.52 EUR is only 5.75% according to our simulation, leaving little upside (Appendix **D.XVIII**). Further comments on the benefits of the Monte Carlo model, a detailed output and the approach used can be found in Appendix **D.XVII.**

Breakdown between current value of free cash flows and growth opportunities reveals that already 60% of the current price is attributable to implied future growth opportunities

Melexis' stock is composed of 40% PV cash flows and 60% growth value inherent in the stock price. This proportion is fairly high compared to close competitors, such as Micronas and Elmos. This further supports our sell recommendation, as we consider 60% growth value priced into Melexis stock too high and do not believe that these growth opportunities will materialize in the future. Using our own forecasts, the present value of the cash flow and the growth opportunities represent each 50% of the share price (see the red rectangle and Appendix **D.I**, **D.XIII**).

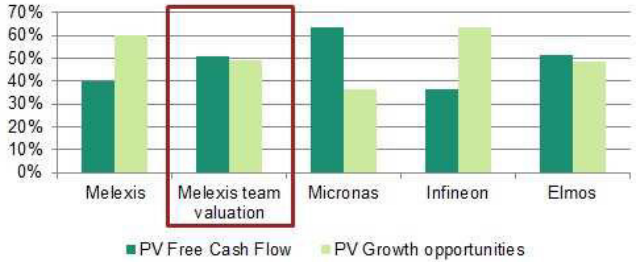


Figure 17: *Inherent growth opportunities*
Source: *Bloomberg, Team analysis*

Analyst intrinsic value recommendations – Target prices versus Melexis actual stock performance

We created a historical bandwidth of the minimum and maximum target prices with a twelve month horizon made by analysts and compared those to the actual stock price twelve months later. We found that the Melexis' stock price was historically in line with the minimum target price recommendations by analysts. Currently, the share price of 23.52 is 40% above the maximum price targets half a year ago. Assuming that the historic trend of Melexis stock price being closer to the minimum analyst price recommendation, we could conclude that the current share price is too high, further supporting our sell recommendation. Further explanations and a graph can be found in Appendix **D.XIV**. Moreover, 85% of the brokerage houses such as ING and ABN now are recommending a hold strategy. Some brokers, who recommended a buy only a few weeks ago, now have a more conservative view on Melexis. Our team sees a clear tendency in the consensus to a sell recommendation if the stock price increases further. Both analyses again support our sell recommendation due to a clear overvaluation and not because of the business model itself.

E. Main risk factors – The war for talent is the most crucial risk for Melexis

We focused in this section on the main risks for Melexis. Those are currency fluctuations, dependence on key personal, potential defects in products and agency conflicts inherent in the corporate structure of Melexis. An analysis of additional minor risks can be found in Appendix **E.I** and **E.II**.

Currency fluctuations have a negative effect of a stronger EUR – Melexis generates more than 58% of its revenue outside of the Euro area; a stronger EUR in comparison to other currencies, will have a strong negative impact on Melexis' revenue and income (in EUR terms). In 2012, approximately 55% of Melexis' sales and approximately 43% of its operating costs are denominated in USD. Hence, Melexis' net exposure to the EUR/USD exchange rate is 12%. Therefore, Melexis is exposed to a strengthening of the EUR with regards to the USD, which could decrease its earnings. For instance, Micronas, one of Melexis' close competitors, experienced a strong decrease in its revenues in 2012 and 2013 due to the weaker Yen. In contrast, a potential decrease in the EUR/USD exchange rate (e.g. due to a potential deepening of the European crisis) could even have a positive effect on the revenue and earnings of Melexis.

Dependence on key personal and ability to recruit/retain qualified personal – Melexis' performance is highly dependent on its ability to attract engineers in order to continue to develop innovative products. Several studies have shown that there is a global shortage of engineers and fierce competition of technology companies towards hiring the best engineers. For instance, a recent study carried out by the German Engineering Association showed that 92,000 engineering jobs were not filled in Germany in 2012. Moreover, engineers were ranked number two among the hardest job positions to fill for employers in 2012 globally (up from rank 4 in 2011) as described by a survey of more than 38,000 companies in 41 countries conducted by ManpowerGroup. Therefore, Melexis could be either not able to hire the most skilled, innovative and motivated workforce or could be forced to outbid another company, which would increase operating costs (salaries). If Melexis, at some point in the future, loses its ability to attract the best personal, the firm's competitive edge reduces materially affecting its business, result of operations and financial condition.

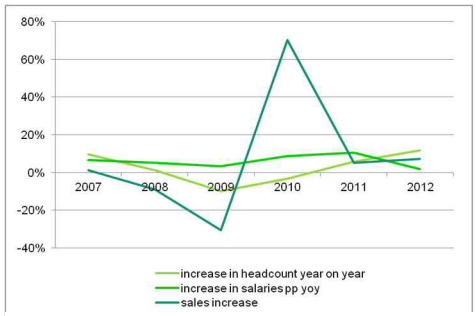


***Figure 18**: Increases of salaries per person yoy*
***Source**: Melexis*

	Consumer	Industrial	Automotive
Temperature (Degree Celsius)	0C to 40C	-10C to 70C	-40C to 160C
Operation time	2 to 5 years	5 to 10 years	up to 15 years
Humidity	Low	Environment	0% to 100%
Tolerated Field Failure Rate	<10%	<1%	Target: 0 Failure
Documentation	Minimal	Conditional	Required
Supply	Average 1 year	2 to 5 years	up to 30 years

***Figure 19**: Highest demand on the quality of Melexis' products **Source**: PWC*

Defects in products being delivered to customers due to lack of quality of products – Despite rigorous and extensive testing, there might be constructional defects of specific products of the company which could lead to adverse publicity, loss of revenues and market share, enhanced warranty, service or insurance costs, or even trials against the company. In addition, Melexis has to spend financial resources to assure a high standard of quality of its products; should the company fail to closely monitor its suppliers standards of production, the quality of Melexis' products could be severely hampered.

Melexis' corporate structure creates agency conflicts between owners, managers and outside shareholders – Melexis main shareholder holds 53.58% of all of the company's outstanding ordinary shares and thus, can exert significant influence on Melexis' management and corporate decisions through his voting rights including appointment of directors to the board and approval of significant corporate transactions. There are significant interrelations between Melexis' top management and its biggest shareholder, which could lead to conflicts of interest.

F: Corporate Governance and Corporate Social Responsibility – Corporate Social Responsibility are a major focus of Melexis

Melexis' efforts in corporate governance are tainted by a possible conflict of interest – Melexis has adopted the Belgian Corporate Governance Code in 2009. We estimated the quality of Melexis' corporate governance by applying a score of Melexis' compliance with respect to each of the Code's main principles. Melexis' **final score is 7.9** (out of a maximum of 10) indicating a high compliance (Appendix **F.II**). However, we identified substantial problems with regards to Melexis corporate structure, which could potentially decrease interest alignment between management and outside shareholders. Moreover, Melexis' management provides little guidance with regards to its intended use of its excess cash balance, which is not aligned with good corporate governance.

The board of directors comprises of three independent members, two private shareholders and the CEO – All the directors all have an academic background and experience in management functions in the engineering- and technology industry. Mrs. Françoise Chombar has been on the board since 1994 and is married to Mr. De Winter, who is CEO of X-FAB, which is the main supplier to Melexis. Furthermore, Mrs. Françoise Chombar and Mr. De Winter together with Roland Duchâtelet are the directors and owners of Xtrion NV, which is the major shareholder of Melexis with 53.6% (Appendix **F.I**).

Melexis' products leave a green footprint on the planet – Corporate Social Responsibility is inherent in the business model of Melexis. The ICs and IC sensor technologies developed by Melexis and used around the world have led to more environmental friendly cars. Innovation and improvements in the sensor technology by Melexis have strongly decreased fuel consumption resulting in lower emissions and higher energy efficiency. For instance, Melexis' advanced microcontroller (e.g. BLDC motor drivers) are a critical component of hybrid and electrical cars. Please see Appendix **F.III** for further analysis.

G. Investment Summary– Time for reversing gear

Current Share price of 23.52 EUR seems overvalued from a fundamental perspective – In the last year, the share price has seen tremendous price increase (+90% yoy). While this might per se not be a bad thing, it also enhances the danger of a too optimistic outlook by the market on the potential revenue growth of Melexis. Based on our fundamental analysis, the share price of 23.52 EUR seems overvalued being above both of our Base case price estimate of 18.3 EUR and our Bull case price estimate of 21.7 EUR as determined by the DCF model. In addition, price estimates determined by using the multiples method and Monte Carlo Simulations validate our sell recommendation (Appendix **D.XVII**). Furthermore last year's price increase led to a recommendation downgrade to "Hold" from most analysts, potentially pointing to worsening price expectations.

Automotive industry growth rate is attractive but increasing competition will decrease future margins – The automotive semiconductor industry is expected to grow between 7%-9% until 2018. This trend is driven by both, growth in the automotive market and the growth in the content of semiconductor per vehicle (Appendix **B.VIII**, **B.IX**). While the high growth rate will be positive for the overall market in the short run, we expect an increase in competition within industry and threat of new entrants, diminishing the upside potential of long term growth. The companies in the market have already intensified their focus on this segment, while new companies like Samsung and LG are also entering the 'automotive semiconductor' market.

Non-automotive segment registering a negative growth – Melexis has been trying to use the products it develops for the automotive segment in similar applications for non-automotive segment. Currently 16% of its revenues stem from non-automotive sector, which the management intends to increase to 25%. However, revenues generated in this segment have been constantly declining (except for one year during the recovery) since 2006 with 8 % p.a. Based on our analysis, we expect the revenue growth for the non-automotive sector to ultimately flatten out from -10% to -4% by 2016.

Pressure on Margins increases due to increasing competition and war for talent – The industry is heavily dependent on continuous development of technological innovations to counteract margin pressures and increase sales. A basic requirement for this is a highly talented and strongly motivated engineering team. However, the global semiconductor industry in general has been suffering from an excess demand for qualified engineers and the struggle for attracting talent should continue to take a toll on Melexis' margins. We expect the salaries to further outpace the growth of revenues leading to an increase in labour costs for Melexis. In combination with the expected growth of 9% in SG&A and R&D expenditure, we expect the pressure on Melexis' margins to further exacerbate (Appendix **C.VI**, **C.VII**).

Major risks to Melexis lie within the corporate structure, product defects and attracting talented personnel – In addition to being a small cap firm, the corporate structure of Melexis is complex with a possibility of conflict of interest between the major shareholder and its instated management team, and the outside shareholders. (Appendix **A.IV**). Furthermore possible products defects, resulting in call backs, or failing to attract talented personnel pose further risks to Melexis further success.

Halt in the share buyback program – In spite of ample cash on the balance sheet Melexis has stopped its share repurchase, it has been conducting nearly every year in the past. Melexis' management did not provide any guidance on future use of cash nor the likelihood of the repurchasing programme being reinstated, but during the Q2 earnings call 2012 a buyback threshold of 12 EUR was mentioned. Combining these two factors with the historically high share price, might give an indication that Melexis management team does not believe in further price appreciation.

Team disclosure: We assign a BUY rating when a security is expected to deliver returns of 15% or greater over the forecasting period. A SELL rating is given when the security is expected to deliver negative returns over the forecasting period, while a HOLD rating implies flat returns over the forecasting period.

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CFA Institute

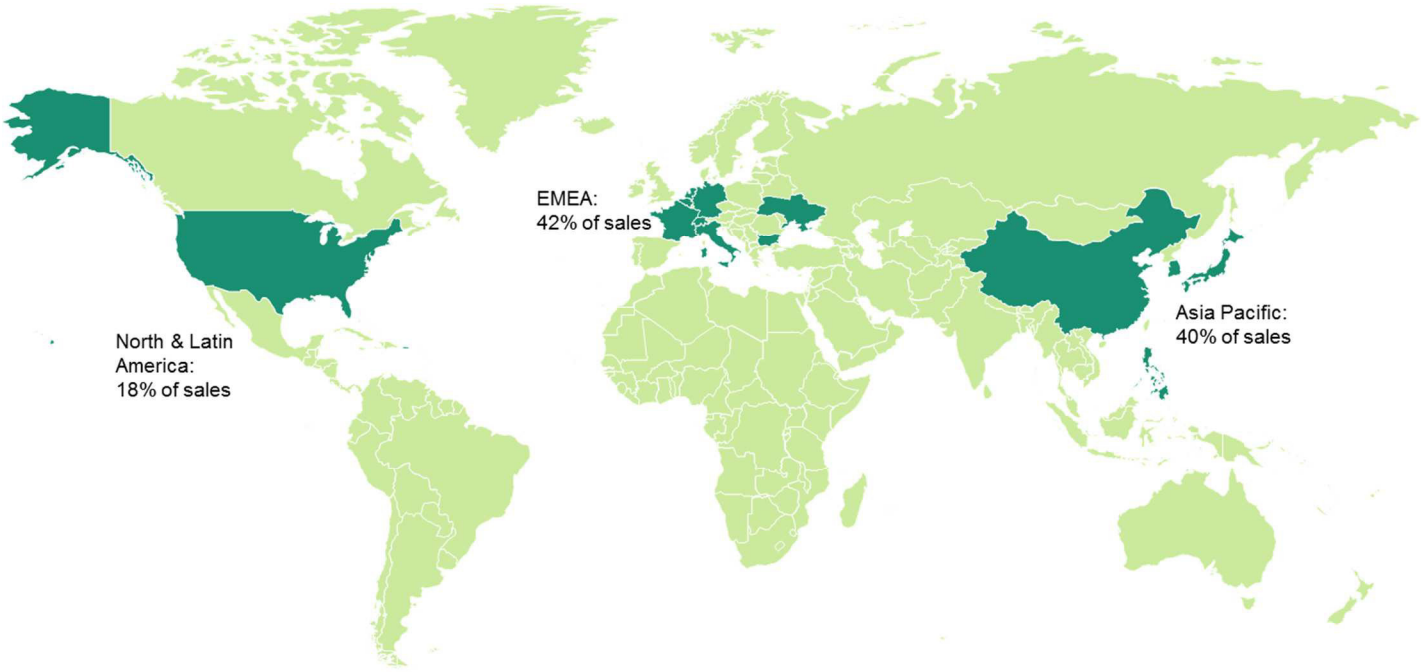
CFA Institute Research Challenge

Appendix – In-depth information and analyses of all the used features within the report

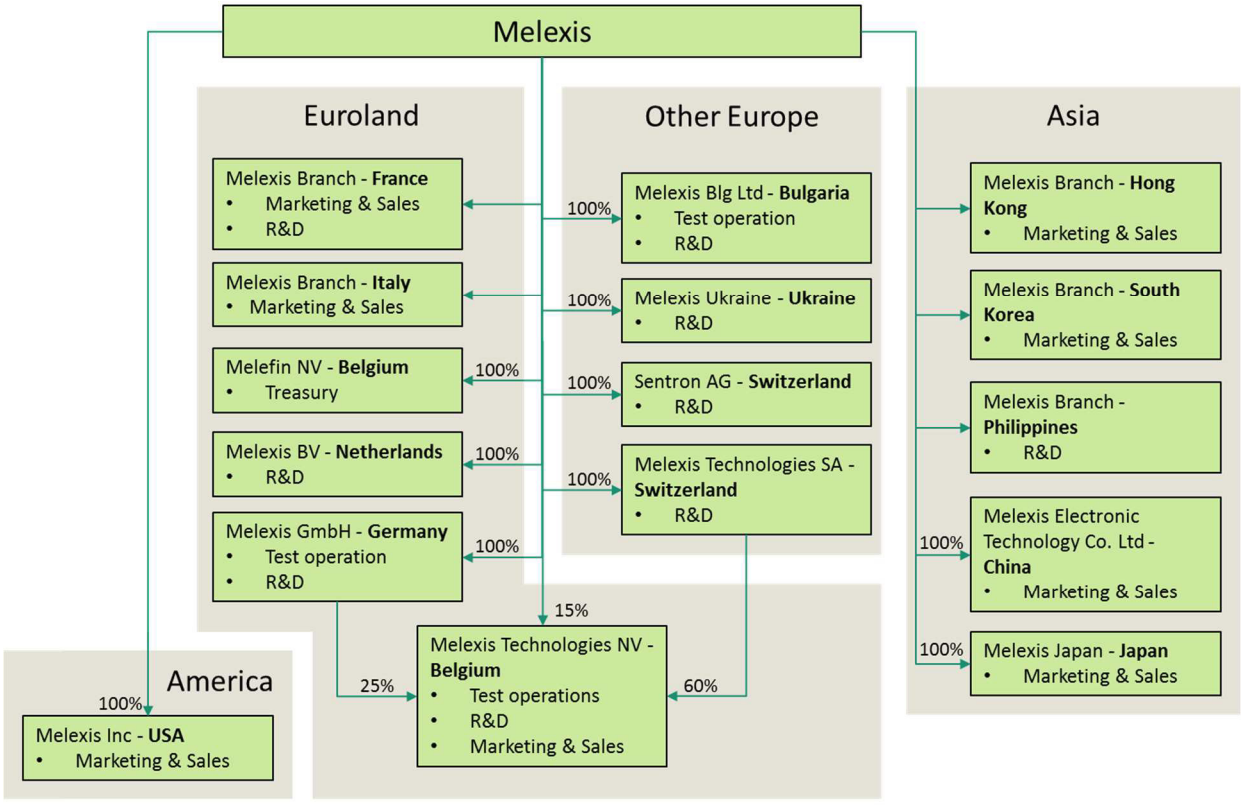
Table of content

Appendix **A.I** – Melexis spread around the world with the main markets in EMEA and Asia Pacific

Source: Annual reports, Team analysis

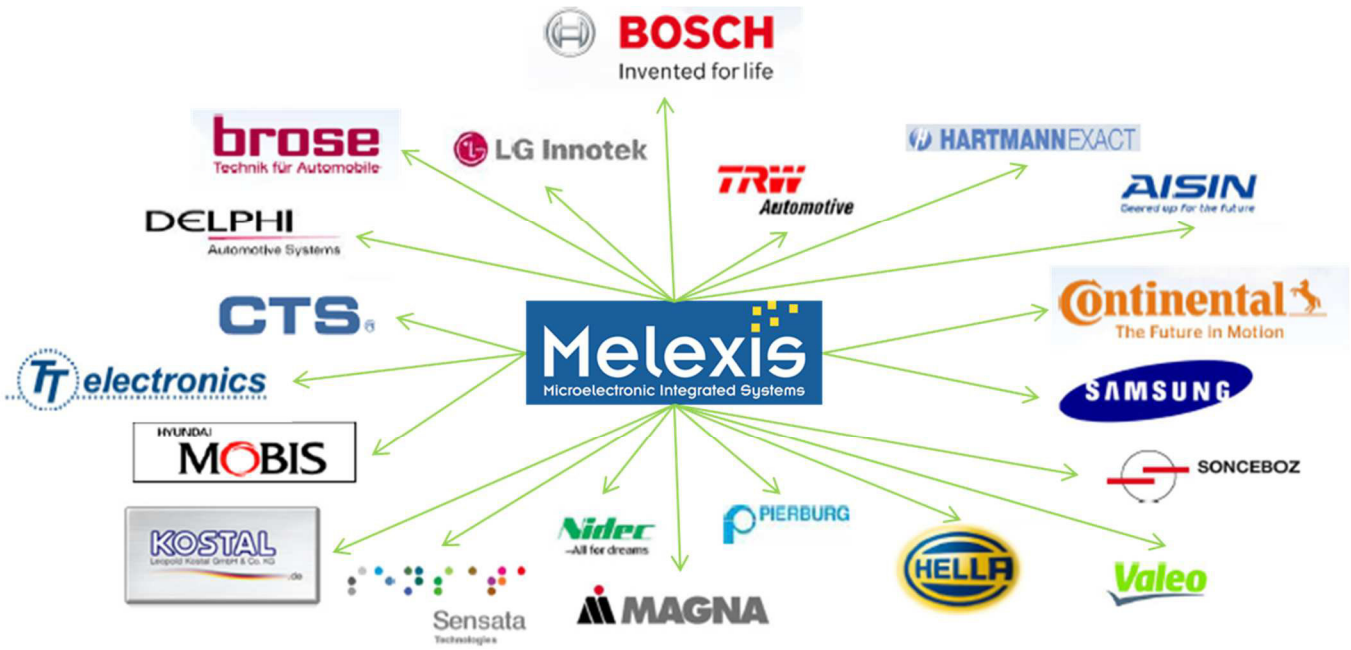


Appendix **A.II** – Overview of the Melexis' branches and subsidiaries around the world



Source: Annual reports

Appendix **A.III** – Melexis Top Customers



Source: Company reports

Appendix **A.IV** – Description of Melexis' business segments

Sensors constitute 59% of total sales of the company. Melexis is a recognized world leader for the magnetic sensor devices, which are mainly based on the Hall Effect sensors. Magnetic sensors use a magnet to detect the presence of a magnetic field. With a Hall Effect sensor, an electrical tension is created across an electrical conductor, i.e. semiconductor, whenever a magnetic field is set across the semiconductor. As a result of this effect, electrical movement can be detected. Thus, these sensors are typically used for measuring a signal in movement, position, temperature or speed. The accurate measurement of sensors is related to the development of special types of ICs and a specific type of production. Millions of Melexis' Hall ICs in cars have such functions as sensing pedal, throttle and steering wheel position, monitoring movement in motors and actuators, sensing rotation of the cam- and crank-shafts in engines, and measuring flow from and to the battery. In this case, X-fab, Melexis' main supplier, is responsible for the front-end production. The back-end production (i.e. packaging) is executed by Melexis.

Actuators are automotive ICs which control or initiate an action. The ultimate aim of these types is to reduce CO2 emissions, improve fuel economy and more responsive cars. Actuators cover about 28% of Melexis' total sales.

Wireless business unit of Melexis consists of short range connectivity and identification solutions such as remote/passive keyless entry and tire pressure monitoring systems. Leading edge radio frequency and radio frequency identification ICs are used to for these products. They offer products which combine and integrate RF, RFIS, sensing and high voltage technology into one microchip. This business unit constitutes 6% of total sales.

Opto represents 6% of Melexis' total sales. This business unit consists of optical products such as RainLight sensors, which control for automatic rain and light control. The product offerings in this business unit are the SensorEyeC family, RainLight sensors, InfraRed Thermal Array Thermometer and MOST transceivers. The optical business unit fulfils a safety function within the automotive systems.

Source: Annual reports

Appendix **A.V** – SWOT Analysis of Melexis

SWOT Analysis	
Strengths	**Weaknesses**
• Focus on innovation, strong intellectual property portfolio • High margins and low required capital due to 'fabless' business model • Strong cash-generating capabilities • Sound financial position	• Heavily reliant upon its foundries due to 'Fabless' model • Cyclical business model • R&D expenses rise faster than sales • Poor ability to compete in the non-automotive sector • Lack of ressources compared to big players
Opportunities	**Threats**
• Increase in safety- and environmental government regulation • Increase in number of environmentally conscious consumers • Increase in demand for electronic vehicles • M&A opportunities may exist for the non-automotive sector	• Weak European car market recovery • New entrants in the automotive segment • Erosion of margins due to rising salaries and increasing competition (war for talent) • Failed product developments that do not meet the customer demand

Source: Annual reports, Team analysis

Appendix **A.VI** – Melexis' fabless business model: a smart way to compete with heavyweights in the automotive semiconductor business?

Over the last 20 years, the semiconductor industry was characterised by a rather commodity-type market, i.e. semiconductor manufacturers were price takers in a highly competitive market with a small number of players, who competed mostly on economies of scale and economies of scope. Increasingly larger investments into R&D were required every year in order to keep up with the competitors in the technological race for market share. Whichever company could produce at the lowest price won the prime market position and could underbid its competitors, thus leading to industry consolidation and establishment of market leading companies, such as Intel (for the microprocessor units) with a monopoly-like market position. For smaller manufacturers, such as Melexis, the only way to compete with industry heavyweights was to find a business model, which does not require these large investments in manufacturing capacity. The solution adopted by Melexis for this problem is the so called "fabless" business model. The "fabless" business model is characterized by outsourcing the manufacturing process to companies with economies of scale and scope, and primarily focusing on the design, development and testing of products.

Advantages of the Fabless Business Model of Melexis

Melexis focuses focus under its fabless business model on the design, development, testing and marketing of its products. The specialization on the development of products, while at the same time outsourcing the main production of its products, allows Melexis to establish a dominant position in a niche market (namely Hall sensors, in which Melexis is a world leading company) and not to compete with larger companies (such as Infineon or Bosch), which could use their economies of scale to underbid the prices of Melexis' products.

Disadvantages of the Fabless Business Model of Melexis

Melexis is heavily reliant upon its foundries, without which Melexis would have no way to supply its customers with its products. All of Melexis's foundries are located in Asia, which increases the risk of nature catastrophes and adverse political. Future earthquakes, political instability or another outbreak of SARS in Asia could seriously cripple Melexis's ability to supply its customers with products. Relying upon foundries for the manufacturing of its products limits Melexis's control over delivery schedules as well as over production costs and methods.

Source: McKinsey Report, Team analysis

Appendix **B.I** – Largest competitors

Rank	Automotive	Percentage of automotive semiconductor market share
1	Renesas Electronics	13,4%
2	Infineon Technologies	8,6%
3	STMicroelectronics	6,1%
4	Freescale Semiconductor	5,1%
5	NXP Semiconductor	3,7%
	Melexis	1,1%
	Others	62,1%
	Total	100%

Source: Factset, Annual reports, IDC, Team analysis

Appendix **B.II** – Automotive semiconductor competitors

EURm	Sales automotive / total sales	Sales automotive 2012 (m $)	Total sales 2012 (m $)	Market share automotive
Renesas Electronics	32%	2.586	9.955	13,4%
Infineon Technologies	43%	1.660	3.904	8,6%
STMicroelectronics	19%	1.177	6.347	6,1%
Freescale Semiconductor	25%	986	3.945	5,1%
NXP Semiconductor	22%	711	3.301	3,7%
ROHM	25%	627	2.558	3,2%
Sanken (including Allegro)	54%	597	1.106	3,1%
On Semiconductor	26%	570	2.193	3,0%
Analog Devices	17%	348	2.045	1,8%
Melexis	84%	209	247	1,1%
Elmos	85%	153	180	0,8%
Micronas	94%	132	140	0,7%
Atmel	12%	130	1.083	0,7%
Austria Microsystems	10%	39	388	0,2%
Total	27%	9.924	37.392	51,4%

Renesas Electronics Corporation is a semiconductor manufacturer. The Microcontroller division engages in the research, design, development, manufacture, sale and service of microcontrollers for automobiles, industrial machinery, consumer electronics and computers. Automotive sales account for 32% of its sales.

Infineon Technologies AG designs, manufactures, and markets semiconductors and related products. The Company's products include microprocessors, memory components, microcontrollers, integrated circuits, digital and analog sensors, and fiber optics. Infineon markets its products to the communications, automotive, industrial, and consumer electronics sectors. Automotive sales account for 43% of its sales in 2012 and increased to 45% in 2013, a 3% yoy increase.

STMicroelectronics N.V. designs, develops, manufactures, and markets semiconductor integrated circuits and discrete devices. The Company's products are used in the telecommunications, consumer electronics, automotive, computer, and industrial sectors. Geographically, customers are located in North America, Europe, and the Asia/Pacific region. Automotive sales account for 19% of its sales.

Freescale Semiconductor Ltd. provides embedded processing semiconductors and related solutions. The Company's embedded processor products include microcontrollers, single- and multi-core microprocessors, applications processors and digital signal processors. Automotive sales account for 25% of its sales.

NXP Semiconductors NV operates as a global semiconductor company. The Company designs semiconductors and software for mobile communications, consumer electronics, security applications, in-car entertainment, and networking. NXP offers its products to the automotive, identification, wireless infrastructure, lighting, mobile, and computing applications. Automotive sales account for 22% of its sales.

ROHM designs and manufactures semiconductors, integrated circuits and other electronic components. These components are used in the dynamic and ever-growing wireless, computer, automotive and consumer electronics markets. Automotive sales account for 25% of its sales.

Allegro MicroSystems, LLC designs, develops, manufactures, and markets analog and mixed-signal semiconductors as a subsidiary of the mother company Sanken. The Company offers magnetic sensor integrated circuits (ICs), dual element switches, micropower switches, single output drivers, and LED drivers. Allegro MicroSystems serves automotive, office automation, communications, consumer, and industrial markets worldwide. Automotive sales account for 54% of its sales.

ON Semiconductor Corporation (ON Semiconductor) designs, manufactures and markets a portfolio of semiconductor components that address the design needs of electronic systems and products. The Company operates in three segments: Application Products Group, Standard Products Group, and SANYO Semiconductor Products Group. The Company's power management semiconductor components control, convert, protect and monitor the supply of power to the different elements within a variety of electronic devices. The Company's portfolio of power and signal management, logic, discrete and custom devices focuses customers in automotive, communications, computing, consumer, industrial, light emitting diode (LED) lighting, medical, military/aerospace, smart grid and power applications. The Company's data management semiconductor components provide clock management and data flow management for precision computing and communications systems. Automotive sales account for 26% of its sales.

Analog Devices, Inc. designs, manufactures, and markets integrated circuits used in analog and digital signal processing. The Company's products are part of communications, computer, industrial, instrumentation, military/aerospace, automotive, and high-performance consumer electronics applications. Analog Devices sells its products worldwide. Automotive sales account for 17% of its sales.

ELMOS Semiconductor AG designs, produces and markets application specific integrated circuits (ASICs) primarily to the automotive industry. The Company's high-performance analog and mixed signal ASICs are used in automotive electronic control systems, household appliances, and a variety of industrial products. ELMOS also provides design and testing services to third party manufacturers. Automotive sales account for 85% of its sales.

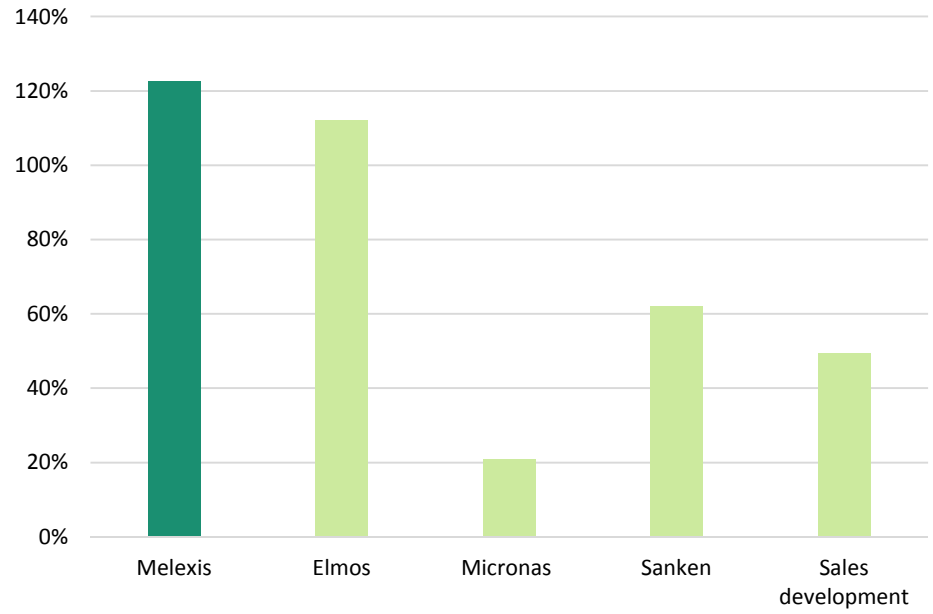
Micronas Semiconductor Holding AG develops and manufactures a wide range of semiconductors and modules used by the automotive and consumer goods industries. The Company sells cellular semiconductors and modules, stereo and video signal processing integrated circuits and automobile engine, instrument and body electronic components, sensors and controllers worldwide. Automotive sales account for 94% of its sales.

Atmel Corporation (Atmel) is engaged in designing, developing and supplying of microcontrollers. Atmel offers a portfolio of touch products, which integrate its microcontrollers with touch-focused intellectual property (IP). Its semiconductors also enable applications in many other fields, such as smart-metering for utility monitoring and billing, buttons, sliders and wheels found on the touch panels of appliances, various aerospace, industrial and military products and systems, and electronic-based automotive components, like keyless ignition, access, engine control, lighting and entertainment systems, for standard and hybrid vehicles. Automotive sales account for 12% of its sales.

Austria micro systems AG (ams) develops and manufactures high-performance analog semiconductors. ams' product range includes sensor, sensor interfaces, power management ICs and wireless ICs for customers in the consumer, industrial, medical, mobile communications and automotive markets. The Company is based in Austria. Automotive sales account for 10% of its sales.

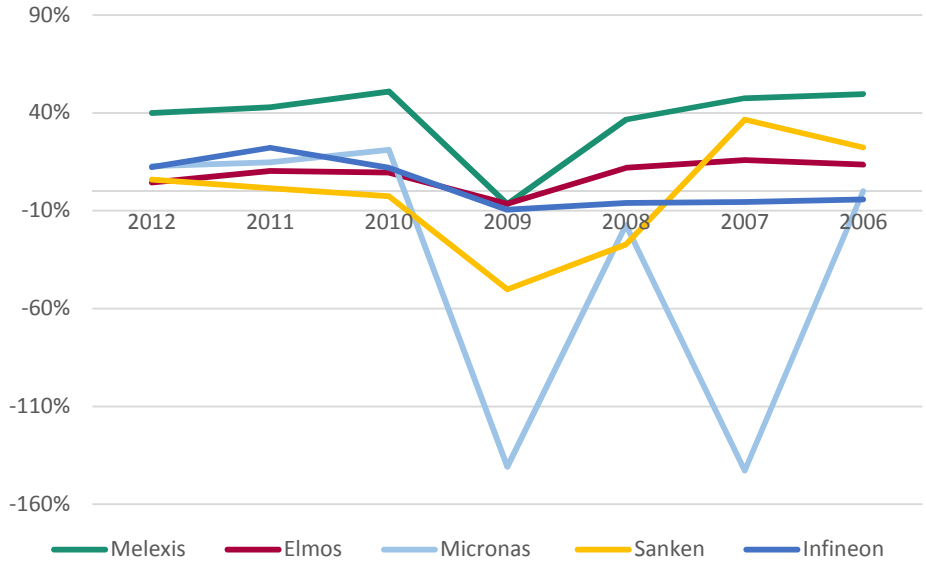
Source: Factset, Bloomberg, Financial Times, Annual reports, IDC, Team analysis

Appendix **B.III** –total sales in 2012 as a percentage of total sales in 2006



Source: Factset, Team analysis

Appendix **B.IV** – Historic Return on Assets



Source: Factset, Team analysis

Appendix **B.V** – Core competitor's historic ratios and forward looking multiples

	2006	2007	2008	2009	2010	2011	2012
Melexis							
Sales development	100%	101%	92%	64%	109%	114%	123%
Gross margin	28%	39%	39%	35%	45%	45%	45%
EBIT margin	21%	19%	16%	6%	26%	24%	23%
ROE	50%	47%	36%	-7%	51%	43%	40%
ROA	20%	22%	14%	-3%	27%	26%	26%
DEBT/Total assets	59%	54%	61%	61%	47%	40%	34%
Cash Conversion Cycle (Days)	121	148	174	215	146	157	142
Asset turnover	119%	121%	118%	84%	122%	130%	126%
Elmos							
Sales development	100%	110%	109%	77%	115%	121%	112%
Gross margin	45%	44%	43%	29%	45%	46%	42%
EBIT margin	26%	19%	25%	-14%	13%	13%	24%
ROE	14%	16%	12%	-6%	9%	10%	4%
ROA	9%	11%	8%	-4%	6%	7%	3%
DEBT/Total assets	30%	31%	30%	30%	31%	31%	30%
Cash Conversion Cycle (Days)	143	139	153	158	171	169	169
Asset turnover	60%	65%	65%	45%	67%	73%	68%
Micronas							
Sales development	100%	88%	74%	30%	23%	20%	21%
Gross margin	32%	29%	29%	11%	34%	37%	40%
EBIT margin	-3%	-11%	-4%	-26%	12%	26%	13%
ROE	0%	-143%	-17%	-141%	21%	15%	13%
ROA	0%	-78%	-9%	-52%	9%	7%	7%
DEBT/Total assets	23%	45%	46%	63%	56%	54%	48%
Cash Conversion Cycle (Days)	130	100	73	92	85	100	92
Asset turnover	69%	103%	108%	70%	68%	57%	57%
Sanken(Including Allegro)							
Sales development	100%	90%	72%	66%	71%	65%	62%
Gross margin	21%	19%	14%	12%	21%	20%	22%
EBIT margin	20%	25%	-3%	-4%	29%	24%	11%
ROE	22%	36%	-27%	-50%	-3%	1%	6%
ROA	10%	16%	-11%	-14%	-1%	0%	2%
DEBT/Total assets	57%	55%	61%	71%	75%	76%	73%
Cash Conversion Cycle (Days)	105	119	143	134	128	154	184
Asset turnover	105%	106%	99%	102%	109%	97%	85%
Infineon							
Sales development	100%	97%	54%	38%	42%	50%	49%
Gross margin	26%	2%	35%	22%	38%	41%	37%
EBIT margin	1%	-4%	4%	-8%	12%	19%	13%
ROE	-4%	-6%	-6%	-10%	12%	22%	12%
ROA	-2%	-3%	-2%	-5%	6%	13%	7%
DEBT/Total assets	45%	44%	69%	49%	47%	43%	39%
Cash Conversion Cycle (Days)	67	67	72	103	74	41	45
Asset turnover	71%	72%	61%	66%	66%	68%	66%
Average							
Sales development	100%	97%	80%	55%	72%	74%	73%
Gross margin	30%	27%	32%	22%	36%	38%	37%
EBIT margin	13%	10%	8%	-9%	18%	21%	17%
ROE	16%	-10%	0%	-43%	18%	18%	15%
ROA	7%	-6%	0%	-16%	10%	11%	9%
DEBT/Total assets	43%	46%	53%	55%	51%	49%	45%
Cash Conversion Cycle (Days)	113	115	123	140	121	124	126
Asset turnover	85%	93%	90%	73%	86%	85%	80%

	2012	2013	2014	2015
Melexis				
EV/Sales	4,1x	3,7x	3,4x	3,2x
EV/EBITDA	14,7x	13,0x	11,8x	11,0x
EV/EBIT	17,9x	16,2x	14,5x	13,3x
P/E	19,1x	18,4x	16,6x	15,4x
Elmos				
EV/Sales	0,9x	0,9x	0,8x	0,7x
EV/EBITDA	5,5x	5,3x	4,3x	3,5x
EV/EBIT	13,7x	12,3x	8,4x	6,1x
P/E	22,4x	19,2x	13,1x	9,3x
Micronas				
EV/Sales	0,3x	0,3x	0,3x	0,3x
EV/EBITDA	1,3x	2,3x	1,6x	1,3x
EV/EBIT	1,9x	5,9x	2,9x	2,1x
P/E	11,3x	26,0x	19,6x	13,8x
Infineon				
EV/Sales	1,5x	1,5x	1,4x	1,3x
EV/EBITDA	6,6x	7,5x	5,7x	5,0x
EV/EBIT	12,9x	18,1x	11,5x	9,3x
P/E	18,2x	30,1x	17,6x	13,9x

Source: Factset, Bloomberg, Team analysis

Appendix **B.VI** – Herfindahl-Hirschmann-Index in automotive semiconductor market

Company name	Market share automotive 2012
Renesas Electronics	13
Infineon Technologies	9
STMicroelectronics	6
Freescale Semiconductor	5
NXP Semiconductor	4
ROHM	3
Sanken (including Allegro)	3
On Semi	3
Analog Devices	2
Melexis	1
Elmos	1
Micronas	1
Atmel	1
Austria Microsystems	0
Herfindahl-Hirschmann-Index	365

Source: Factset, Team analysis

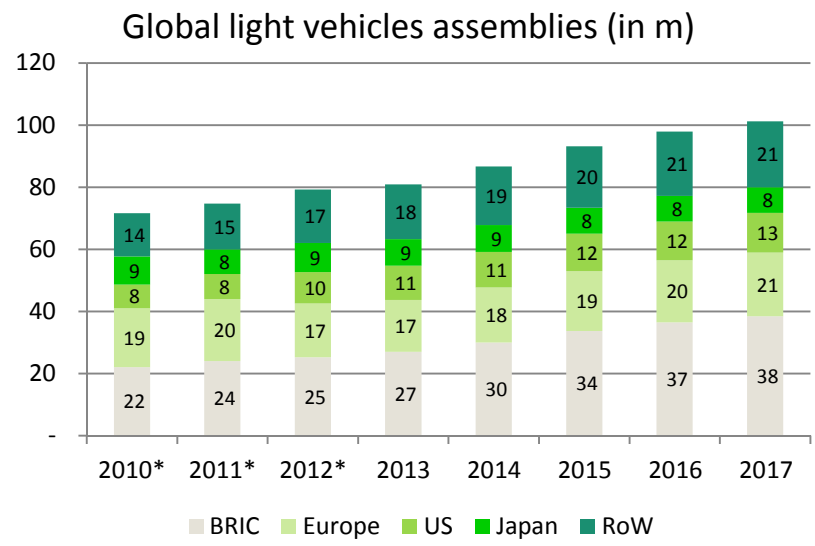
Appendix **B.VII** – Wafer utilization of largest foundries

Sales in b USD	2011	2012
TSMC		
Sales	14,5	17,1
Utilization	91%	91%
Marketshare	48,82%	49,50%
UMC		
Sales	3,6	3,6
Utilization	78,60%	78,80%
Marketshare	12,12%	10,40%
SMIC		
Sales	1,31	1,7
Utilization	68,90%	88,30%
Marketshare	4,41%	4,90%
Total		
Combined utilitzation	0,87209	0,88838
Combined market share	65,35%	64,80%
Total market	29,7	34,6

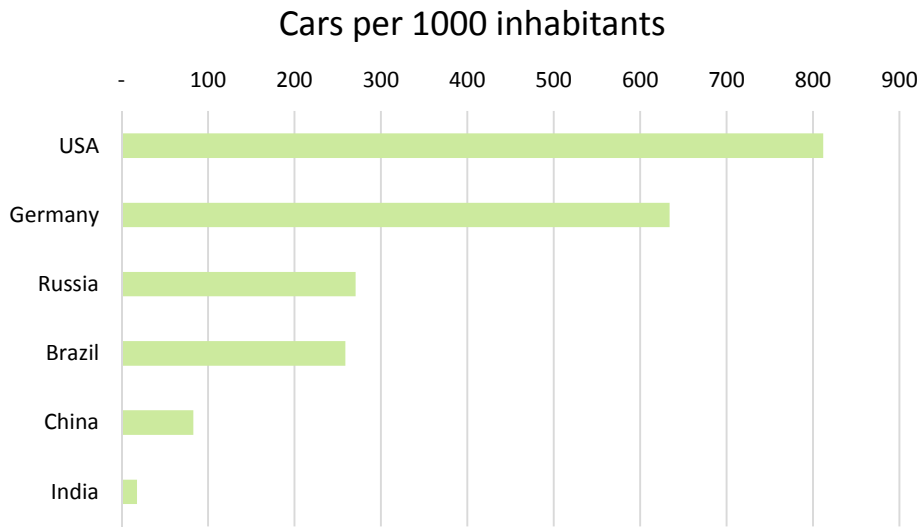
Note: These companies represent around 65% of the foundries market. The company ranked third is privately owned.

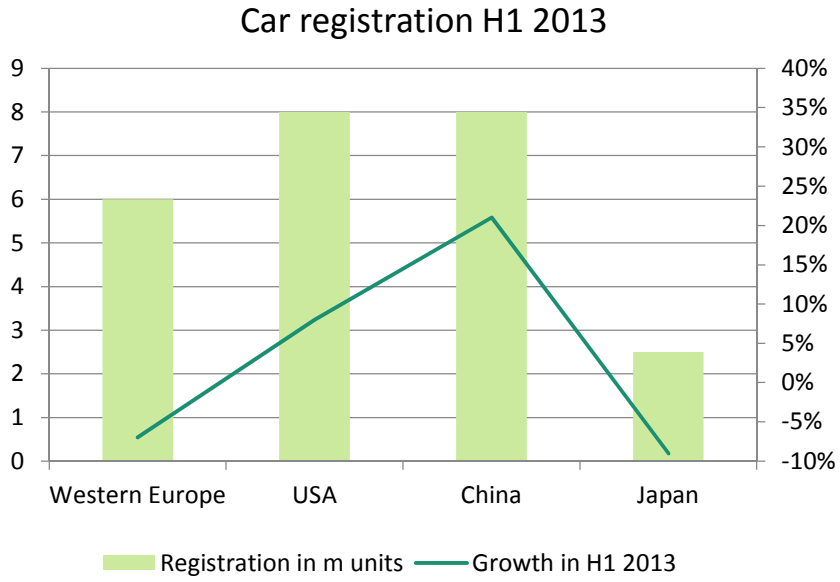
Source: Gartner report, Annual reports, Team analysis

Appendix **B.VIII** – Automotive market: History and forecast



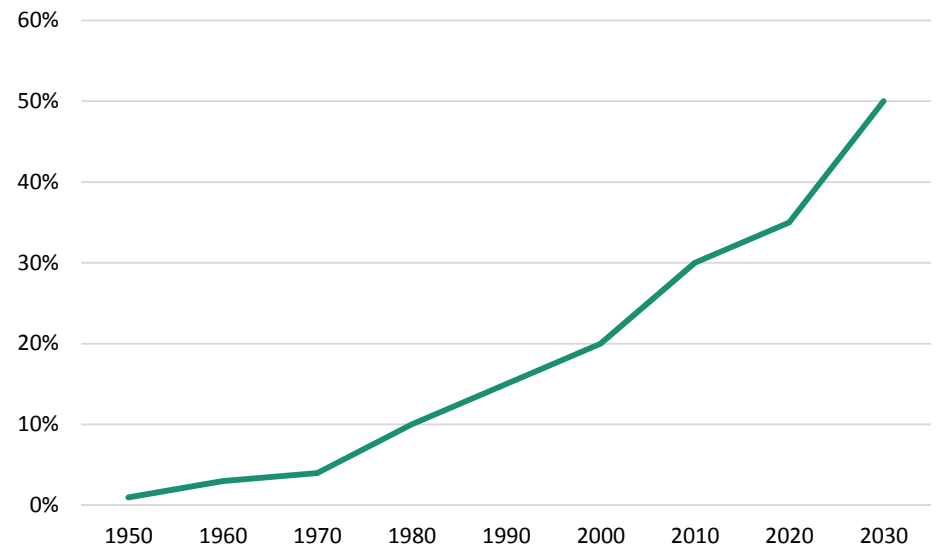
** Actual figures*





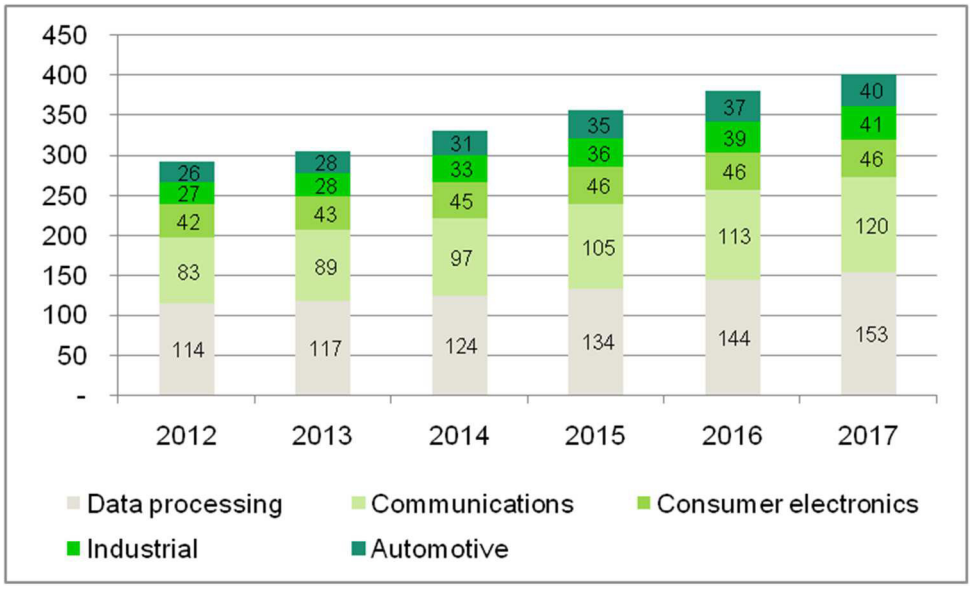
Source: PWC Autofacts, Infineon Annual Report 2012, Micronas Investor Presentation, Team analysis

Appendix **B.IX** – Automotive electronic costs as % of total car costs



Source: PWC Autofacts, Team analysis

Appendix **B. X** – Growth of semiconductor industry per segment in $ b



Source: WSTS, Team analysis

Appendix **B.XI** – Porter's 5 forces analysis per segment

	Automotive semiconductor		Non-automotive semiconductor	
Threat of new entrants	High Profitability (-) High growth expectations (-) Entry barriers (+)	2	Low entry barriers (-) Low profitability (+) Mixed growth (o)	3
Threat of new substitutes	Low switching costs (-) Ease of substitution, long development cycles (+)	4	Low switching costs (-) Fast development cycles (-)	1
Bargaining power of customers	Price sensitive (-) High buyer concentration (-) Quality beats price (+)	3	Price sensitive (-) High buyer concentration (-)	2
Bargaining power of suppliers	Supplier needs training (-) Excess capacity of suppliers (+)	3	Supplier products are commodities (+) Excess capacity of suppliers (+)	4
Intensity of incumbent rivalry	High growth (+) Low advertising and sales expenses (+)	4	Low growth (-) Increasing specialisation and concentration (-)	2

Source: Team analysis

Appendix **B.XII** – Car emission regulation

"The drive for CO2 reduction will provide global growth in semiconductors for advanced engine management systems as well as electric vehicle controls."
Dr.Reinhard Ploss, CEO
Infineon Technologies

As a reaction to global warming, governments around the world have passed legislation to curb Green House Gas emissions. Automobiles, as one of the biggest contributors, are a natural major target for regulations. These regulations, such as Euro 6 in European Union, where automotive carbon dioxide emissions account for one fifth of the total, set forth maximum emission level per kilometre for new cars. These targets are 5% to 47% below current levels, with Europe and the USA aiming for reductions of 37% and 47% respectively.

To meet these levels, car manufacturers aim to improve engine efficiency and reduce weight amongst others. Semiconductors are needed to improve engine efficiency, as they offer enhanced monitoring and controlling capabilities necessary for improving conventional engines, and for using hybrid or electrical engines. Furthermore, semiconductors can assist the driver in driving more economically, by indicating optimal shifting moments, efficient monitoring tire pressure or controlling comfort systems such as air conditioning better.

Apart from regulators enforcing lower emission targets on car manufacturers going forward, customers look for more efficient and environmentally friendly cars, as fuel prices have been on the rise for the past years, the adverse effects of climate change become more obvious and inefficient cars taxed more heavily in some countries.

Following table summarizes the country specific regulatory emission targets for the automobile manufacturers.

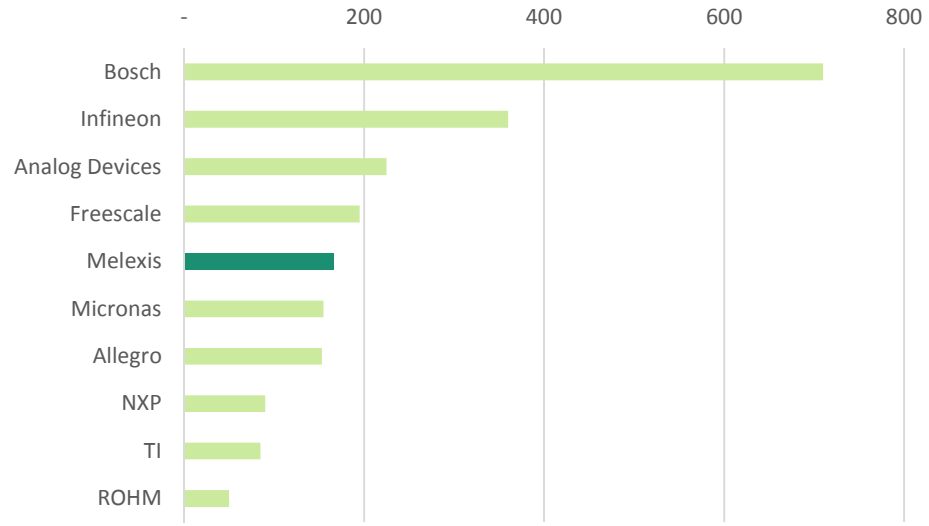
Government regulations for Grams of CO2emission / kilometre

Grams CO2/KM	US 2012-2025	Canada 2010-2015	Canada (Proposed) 2016-2025	EU 2011-2020	Japan 2010-2020	China 2010-2015	China (proposed) 2016-2020	S. Korea 2011-2015	India (Proposed) 2010-2021	Mexico 2011-2016
Start year	2012	2010	2016	2011	2010	2010	2015	2011	2010	2011
End year	2025	2015	2025	2020	2020	2015	2020	2015	2021	2016
Current emission level	206	199	174	135	128	180	161	162	138	200
Target emission level	109	184	109	95	105	161	117	153	113	173
Overall reduction%	47%	8%	37%	30%	18%	11%	27%	5%	18%	13%
Annual reduction%	4.8%	1.6%	5.1%	3.8%	1.9%	2.2%	6.2%	1.4%	1.8%	2.8%

** USA LDV numbers are presented. Passenger car absolute numbers are different but the percentage improvement is the same*

Source: The International council on clean transportation, Team analysis

Appendix **B.XIII** – Automotive car sensor sales 2012



Source: Melexis presentation , Team analysis

Appendix **C.I** – Balance sheet

Balance sheet (in EURm)	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
I. Non current assets	**52**	**56**	**68**	**64**	**70**	**73**	**83**	**93**	**93**	**92**	**92**	**93**	**93**
Intangible assets	3	1	0	2	2	2	2	5	5	6	6	6	6
PPE and Investments	42	46	56	44	49	51	60	69	69	69	70	71	72
Deferred taxes	7	8	12	16	15	15	15	14	13	13	12	11	11
Others	0	0	0	3	4	5	6	5	5	5	5	4	4
II. Current Assets	**118**	**113**	**90**	**90**	**110**	**105**	**113**	**101**	**116**	**138**	**153**	**159**	**163**
Inventories	30	35	34	26	39	37	38	41	43	44	45	47	48
Accounts Receivables, Net	29	34	28	21	28	38	35	37	39	42	44	47	50
Other Current Assets	11	10	17	16	16	8	14	15	16	18	19	21	22
Marketable securities and cash	48	34	10	26	27	22	25	7	18	35	44	45	43
Total assets	**170**	**169**	**157**	**154**	**180**	**178**	**196**	**194**	**209**	**230**	**245**	**252**	**256**
I. Total Equity	**70**	**78**	**62**	**60**	**95**	**107**	**129**	**146**	**158**	**174**	**185**	**190**	**194**
Common Stock Par/Carry Value	1	1	1	1	1	1	1	1	1	1	1	1	1
Retained Earnings	75	87	84	80	117	138	133	151	163	178	189	194	199
Treasury Stock	(6)	(6)	(18)	(18)	(22)	(32)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Other Appropriated Reserves	(1)	(4)	(6)	(3)	0	0	(1)	(2)	(1)	(1)	(1)	(1)	(1)
II. Total Liabilities	**100**	**91**	**96**	**94**	**85**	**71**	**66**	**48**	**51**	**57**	**61**	**62**	**62**
Long-Term Debt	**63**	**48**	**63**	**57**	**40**	**40**	**4**	**14**	**16**	**20**	**21**	**19**	**15**
Long-term Debt	63	48	63	55	37	37	2	12	14	18	20	18	15
Other non current liabilities	-	-	-	2	3	3	1	1	1	1	1	1	-
Total Current Liabilities	**37**	**43**	**33**	**38**	**45**	**31**	**63**	**34**	**35**	**37**	**40**	**43**	**47**
ST Debt & Curr. Portion LT Debt	15	23	15	15	20	5	35	4	4	4	4	4	4
Accounts Payable	7	8	6	7	7	8	12	14	16	19	22	25	29
Income Tax Payable	-	1	1	1	4	5	4	5	5	4	5	5	5
Other Current Liabilities	14	10	11	15	14	13	12	11	10	9	9	9	9
Liabilities & Shareholders' Equity	**170**	**169**	**157**	**154**	**180**	**178**	**196**	**194**	**209**	**230**	**245**	**252**	**256**

Source: Factset, Team analysis

Appendix **C.II** – Income statement

Income Statement (in EURm)	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
Revenue	202	204	186	129	219	231	247	266	288	311	337	363	391
Cost of Goods Sold (COGS) incl. D&A	(117)	(119)	(110)	(81)	(117)	(122)	(132)	(146)	(158)	(171)	(185)	(199)	(214)
Depreciation & Amortization Expense	(7)	(7)	(10)	(8)	(7)	(7)	(10)	(11)	(11)	(11)	(11)	(11)	(11)
Gross Income	**85**	**85**	**76**	**48**	**102**	**108**	**115**	**120**	**130**	**141**	**152**	**164**	**177**
Gross profit margin	*42%*	*42%*	*41%*	*37%*	*47%*	*47%*	*47%*	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*
SG&A Expense	(42)	(47)	(46)	(41)	(46)	(54)	(60)	(65)	(71)	(77)	(84)	(92)	(100)
Depreciation & Amortization Expense	(4)	(4)	(4)	(3)	(4)	(5)	(5)	(6)	(6)	(6)	(6)	(6)	(6)
Other Operating Expense	-	3	(1)	(1)	-	(0)	-	-	-	-	-	-	-
Operating Income / EBIT	**42**	**41**	**30**	**7**	**56**	**54**	**56**	**55**	**59**	**63**	**68**	**73**	**77**
EBIT margin	*21%*	*20%*	*16%*	*5%*	*26%*	*24%*	*23%*	*21%*	*20%*	*20%*	*20%*	*20%*	*20%*
EBITDA	**53**	**53**	**44**	**18**	**68**	**66**	**71**	**71**	**75**	**79**	**84**	**89**	**93**
EBITDA margin	*26%*	*26%*	*24%*	*14%*	*31%*	*29%*	*29%*	*27%*	*26%*	*26%*	*25%*	*24%*	*24%*
Nonoperating Income (Expense)	1	4	1	1	1	1	1	-	-	-	-	-	-
Interest Expense	(3)	(3)	(4)	(3)	(4)	(2)	(2)	(1)	(1)	(1)	(1)	(1)	(1)
Unusual Expense (Income)	-	1	(5)	(12)	1	0	0	-	-	-	-	-	-
Pretax Income	**40**	**42**	**22**	**(7)**	**54**	**53**	**55**	**53**	**58**	**62**	**67**	**71**	**76**
Income Taxes	(5)	(2)	(0)	3	(6)	(7)	(3)	(7)	(7)	(8)	(8)	(9)	(9)
Actual Tax Rate	*13%*	*5%*	*2%*	*37%*	*10%*	*14%*	*6%*	*13%*	*13%*	*13%*	*13%*	*13%*	*13%*
Net Income	**35**	**40**	**22**	**(5)**	**49**	**46**	**52**	**47**	**50**	**54**	**58**	**63**	**66**
Net income margin	*17%*	*20%*	*12%*	*-4%*	*22%*	*20%*	*21%*	*18%*	*18%*	*17%*	*17%*	*17%*	*17%*
Shares outstanding (in m)	43,2	43,2	43,2	43,2	43,2	43,2	40,4	40,4	40,4	40,4	40,4	40,4	40,4
EPS (in EUR)	**0,8**	**0,9**	**0,5**	**(0,1)**	**1,1**	**1,1**	**1,3**	**1,2**	**1,2**	**1,3**	**1,4**	**1,5**	**1,6**
Dividend per share (in EUR)	0,5	0,6	0,6	-	0,3	0,6	0,6	0,7	0,8	1,0	1,2	1,4	1,5
Payout ratio	*62%*	*64%*	*115%*	-	*25%*	*53%*	*51%*	*60%*	*68%*	*76%*	*84%*	*92%*	*92%*

Source: Factset, Team analysis

Appendix **C.III** – Cash flow statement

Cash Flow Statement (in EURm)	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
Net Income	35	40	22	(5)	49	46	52	47	50	54	58	63	66
Depreciation, Depletion & Amortization	11	12	12	11	12	12	15	16	16	16	16	16	16
Deferred Taxes & Investment Tax Credit	(1)	(1)	(3)	(4)	0	0	0	-	-	-	-	-	-
Other Funds	(3)	(4)	0	3	1	(3)	(3)	-	-	-	-	-	-
Funds from Operations	**41**	**47**	**31**	**5**	**61**	**56**	**64**	**63**	**67**	**70**	**75**	**79**	**83**
Changes in Working Capital	(3)	(9)	(3)	15	(15)	4	(7)	(4)	(4)	(3)	(2)	(2)	(2)
Net Operating Cash Flow	**38**	**35**	**28**	**21**	**46**	**59**	**57**	**59**	**63**	**67**	**72**	**76**	**80**
Capital Expenditures	(15)	(15)	(10)	(11)	(15)	(15)	(21)	(25)	(16)	(16)	(17)	(17)	(17)
Net Assets from Acquisitions	-	-	-	-	-	-	-	-	-	-	-	-	-
Purchase/Sale of Investments	(32)	12	4	1	(2)	1	1	-	-	-	-	-	-
Other Funds	(5)	-	(12)	11	-	-	-	-	-	-	-	-	-
Net Investing Cash Flow	**(53)**	**(3)**	**(18)**	**1**	**(17)**	**(13)**	**(20)**	**(25)**	**(16)**	**(16)**	**(17)**	**(17)**	**(17)**
Cash Dividends Paid	(21)	(26)	(25)	-	(12)	(24)	(26)	(28)	(34)	(41)	(49)	(58)	(61)
Change in Capital Stock	-	-	-	-	(4)	(10)	(2)	-	-	-	-	-	-
Issuance/Reduction of Debt, Net	41	(7)	7	(8)	(14)	(15)	(5)	(20)	(1)	7	3	(1)	(4)
Other Funds	0	0	-	-	-	-	-	-	-	-	-	-	-
Net Financing Cash Flow	**19**	**(33)**	**(18)**	**(8)**	**(30)**	**(49)**	**(33)**	**(48)**	**(36)**	**(34)**	**(46)**	**(59)**	**(65)**
Exchange Rate Effect	(0)	(0)	0	0	0	0	(0)	-	-	-	-	-	-
Miscellaneous Funds	0	0	(0)	0	0	(0)	0	-	-	-	-	-	-
Net Change in Cash	**5**	**(1)**	**(7)**	**14**	**(1)**	**(3)**	**4**	**(14)**	**11**	**17**	**10**	**1**	**(2)**
Cash at beginning of period	11	16	15	8	22	21	18	21	7	18	35	44	45
Cash at end of period	16	15	8	22	21	18	21	7	18	35	44	45	43
Free Cash Flow	**(15)**	**32**	**11**	**22**	**29**	**46**	**37**	**34**	**47**	**51**	**55**	**60**	**63**

Source: Factset, Team analysis

Appendix **C.IV** – Segment sales

Segment sales (in EURm)	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
Automotive	138	147	136	90	167	186	209	231	256	281	308	336	364
% of total	*69%*	*72%*	*73%*	*70%*	*76%*	*81%*	*84%*	*87%*	*89%*	*90%*	*91%*	*92%*	*93%*
yoy	*0%*	*7%*	*-8%*	*-34%*	*87%*	*11%*	*12%*	*11%*	*11%*	*10%*	*10%*	*9%*	*9%*
Non-automotive	63	57	50	39	52	44	39	35	32	30	29	28	27
% of total	*31%*	*28%*	*27%*	*30%*	*24%*	*19%*	*16%*	*13%*	*11%*	*10%*	*9%*	*8%*	*7%*
yoy	*0%*	*-10%*	*-12%*	*-22%*	*33%*	*-15%*	*-13%*	*-10%*	*-8%*	*-6%*	*-4%*	*-4%*	*-4%*

Source: Factset, team analysis

Appendix **C.V** – Du Pont analysis

DuPont Analysis	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
ROE	50%	51%	35%	-8%	51%	43%	40%	32%	32%	31%	32%	33%	34%
Assets/Equity X	244%	216%	256%	258%	189%	166%	151%	133%	132%	133%	133%	133%	132%
ROA	20%	24%	14%	-3%	27%	26%	26%	24%	24%	24%	24%	25%	26%
Net income/EBT X	87%	95%	98%	63%	90%	86%	94%	88%	88%	88%	88%	88%	88%
EBT/EBIT X	94%	103%	75%	-104%	96%	98%	98%	97%	98%	98%	98%	98%	99%
EBIT/Sales X	21%	20%	16%	5%	26%	24%	23%	21%	20%	20%	20%	20%	20%
Sales/Assets	119%	121%	118%	84%	122%	130%	126%	137%	138%	135%	137%	144%	152%

Source: Factset, Team analysis

Appendix **C.VI** – Cost analysis

in EURm	2006	2007	2008	2009	2010	2011	2012	CAGR 06-12	CAGR 10-12
Sales	**202**	**204**	**186**	**129**	**219**	**231**	**247**	**3%**	**6%**
Total costs	**159**	**166**	**155**	**121**	**163**	**176**	**191**	**3%**	**8%**
Cost of Sales	117	119	110	81	117	122	132	2%	6%
Research and development expenses	28	30	30	26	30	34	39	6%	14%
General and administrative expenses	10	11	11	10	11	13	13	5%	12%
Selling expenses	5	6	5	5	6	7	8	8%	15%
Cost of Sales	**117**	**119**	**110**	**81**	**117**	**122**	**132**	**2%**	**6%**
Purchases	92	93	81	58	90	94	98	1%	4%
Transportation costs	2	3	3	2	3	3	3	2%	-4%
Salaries	8	9	10	9	8	10	13	8%	25%
Depreciation and amortization	7	7	10	8	7	7	10	8%	19%
Other	7	7	6	5	9	8	7	0%	-8%
Research and development expenses	**28**	**30**	**30**	**26**	**30**	**34**	**39**	**6%**	**14%**
Salaries	14	16	17	16	18	20	22	8%	12%
Depreciation and amortization	3	3	3	2	3	3	3	1%	7%
External services	5	5	4	3	5	6	7	5%	25%
Other	5	6	5	4	5	5	7	3%	17%
General and administrative expenses	**10**	**11**	**11**	**10**	**11**	**13**	**13**	**5%**	**12%**
Salaries	2	3	3	3	3	4	4	8%	6%
Depreciation and amortization	1	1	1	1	1	2	2	12%	10%
External services	2	2	2	1	1	2	2	-1%	56%
Other	4	5	5	4	5	5	6	5%	6%
Selling expenses	**5**	**6**	**5**	**5**	**6**	**7**	**8**	**8%**	**15%**
Salaries	2	3	3	3	3	4	4	12%	13%
Depreciation and amortization	0	0	0	0	0	0	0	20%	10%
Comissions	1	1	1	1	1	1	1	2%	12%
Other	1	2	2	2	2	3	3	18%	13%
Cost types									
Salaries	27	31	33	31	32	38	43	8%	15%
Depreciation and amortization	11	12	14	11	12	12	15	6%	15%
Purchases	92	93	81	58	90	94	98	1%	4%
Other	30	30	27	21	29	32	35	3%	9%

Source: Factset, Team analysis

Appendix **C.VII** – Key financial ratios

Key Financial Ratios	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
Liquidity Ratios													
Current Ratio	3,2	2,7	2,7	2,4	2,5	3,4	1,8	3,0	3,3	3,8	3,9	3,7	3,5
Quick Ratio	2,1	1,6	1,2	1,3	1,2	1,9	1,0	1,3	1,6	2,1	2,2	2,1	2,0
Cash Ratio	0,4	0,4	0,2	0,6	0,5	0,6	0,3	0,2	0,5	0,9	1,1	1,0	0,9
Solvency Ratios													
Total liabilities to Equity	144%	116%	156%	158%	89%	66%	51%	33%	32%	33%	33%	33%	32%
Interest Coverage Ratio	13,1	12,2	7,8	2,1	15,2	22,7	32,4	39,6	49,8	47,0	49,7	57,3	67,1
Efficiency Ratios													
Total Asset Turnover	1,2	1,2	1,2	0,8	1,2	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,5
NWC Turnover	2,5	2,9	3,3	2,5	3,3	3,1	4,9	4,0	3,5	3,1	3,0	3,1	3,4
ACC Receivables Turnover	7,3	6,4	5,9	5,3	9,0	7,0	6,8	7,3	7,5	7,7	7,8	8,0	8,1
Days Of Sales Outstanding	49,7	57,1	61,5	69,2	40,5	52,0	54,0	49,7	48,6	47,6	46,6	45,8	45,1
Inventory Turnover	4,0	3,7	3,2	2,7	3,6	3,2	3,5	3,7	3,8	3,9	4,1	4,3	4,5
Days Of Inventory On Hand	90,4	98,8	115,3	137,5	102,2	113,5	104,5	99,5	97,3	92,7	88,4	84,5	81,0
Payables Turnover	15,4	14,8	14,0	10,6	17,8	14,6	12,0	10,5	9,8	9,2	8,7	8,2	7,7
Number Of Days Of Payables	23,7	24,7	26,1	34,3	20,5	25,0	30,5	34,8	37,4	39,6	42,0	44,6	47,6
Cash Conversion Cycle	116,5	131,3	150,7	172,3	122,2	140,6	128,0	114,4	108,4	100,7	93,0	85,6	78,5
Proftiablity Ratios													
Gross Margin	42%	42%	41%	37%	47%	47%	47%	45%	45%	45%	45%	45%	45%
EBITDA Margin	26%	26%	24%	14%	31%	29%	29%	27%	26%	26%	25%	24%	24%
EBIT Margin	21%	20%	16%	5%	26%	24%	23%	21%	20%	20%	20%	20%	20%
Net Profit Margin	17%	20%	12%	-4%	22%	20%	21%	18%	18%	17%	17%	17%	17%
ROA	20%	24%	14%	-3%	27%	26%	26%	24%	24%	24%	24%	25%	26%
ROE	50%	51%	35%	-8%	51%	43%	40%	32%	32%	31%	32%	33%	34%

Source: Factset, Team analysis

Appendix **C.VIII** – Historic and future Piotroski F Score and Altman Z Score

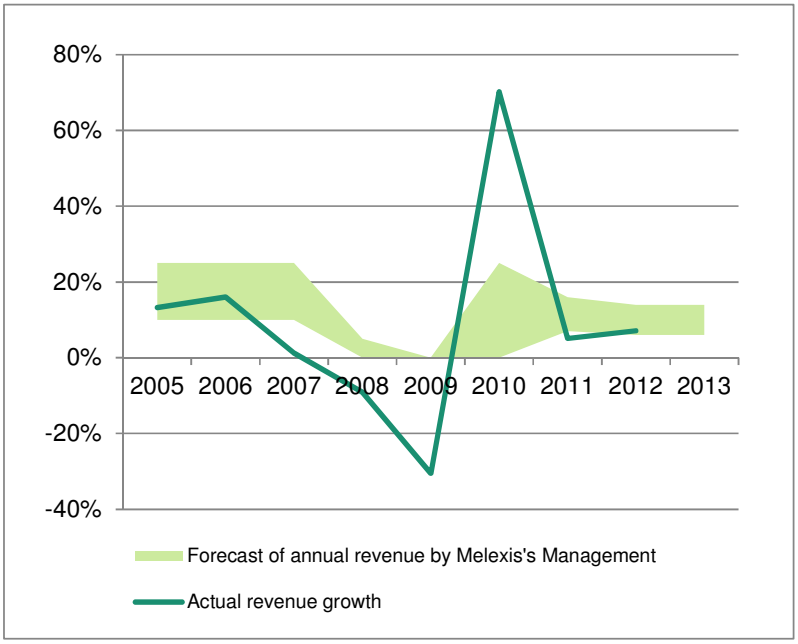
Scores	2006	2007	2008	2009	2010	2011	2012	2013e	2014e	2015e	2016e	2017e	2018e
Piotroski FScore	**6**	**6**	**5**	**4**	**8**	**7**	**6**	**6**	**8**	**6**	**7**	**8**	**8**
Profitability													
Net income / assets	1	1	1	-	1	1	1	1	1	1	1	1	1
Operating cash flow / assets	1	1	1	1	1	1	1	1	1	1	1	1	1
yoy change in ROA	-	1	-	-	1	-	1	-	-	-	-	1	1
Operating cash flow > net income	1	-	1	1	-	1	1	1	1	1	1	1	1
Financials													
Decrease in leverage	-	1	-	1	1	-	1	-	1	-	-	1	1
Increase in liquidity	1	-	1	-	1	1	-	1	1	1	1	-	-
No increase in share count	1	1	1	1	1	1	1	1	1	1	1	1	1
Operating efficiency													
Increase in gross margin	1	-	-	-	1	1	-	-	1	1	1	1	1
Changes in asset turnover	-	1	-	-	1	1	-	1	1	-	1	1	1
Altman Z Score	**4,8**	**4,6**	**3,7**	**3,1**	**5,2**	**5,2**	**5,1**	**6,9**	**6,7**	**6,4**	**6,3**	**6,4**	**6,5**
Working capital / total assets	0,5	0,4	0,4	0,3	0,4	0,4	0,3	0,3	0,4	0,4	0,5	0,5	0,5
Retained earnings / total assets	0,4	0,5	0,5	0,5	0,6	0,8	0,7	0,8	0,8	0,8	0,8	0,8	0,8
EBIT / total assets	0,2	0,2	0,2	0,0	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
Equity market value / book value de	2,7	2,2	1,2	1,6	2,8	2,3	2,8	5,1	4,7	4,3	4,0	3,9	3,9
Sales / total assets	1,2	1,2	1,2	0,8	1,2	1,3	1,3	1,4	1,4	1,4	1,4	1,4	1,5

Piotroski F-Score aims to identify winning and losing stocks using fundamental data by assigning score ranging from 0 to 9, with 9 being the best. Altman Z Score indicates the likelihood of firm bankruptcy in two years' time. A factor above 2.67 indicates a high probability of solvency. Both methods have been calculated as indicated by the original papers. For future estimates of the Z-Score the market value of equity as per 31.12.2013 has been used.

The F Score is currently is in a medium to high range for Melexis. Unfortunately most values apart from 8-9 and 0-1 bear little predictive power. The Z-Score is rather high indicating a low risk of bankruptcy for Melexis.

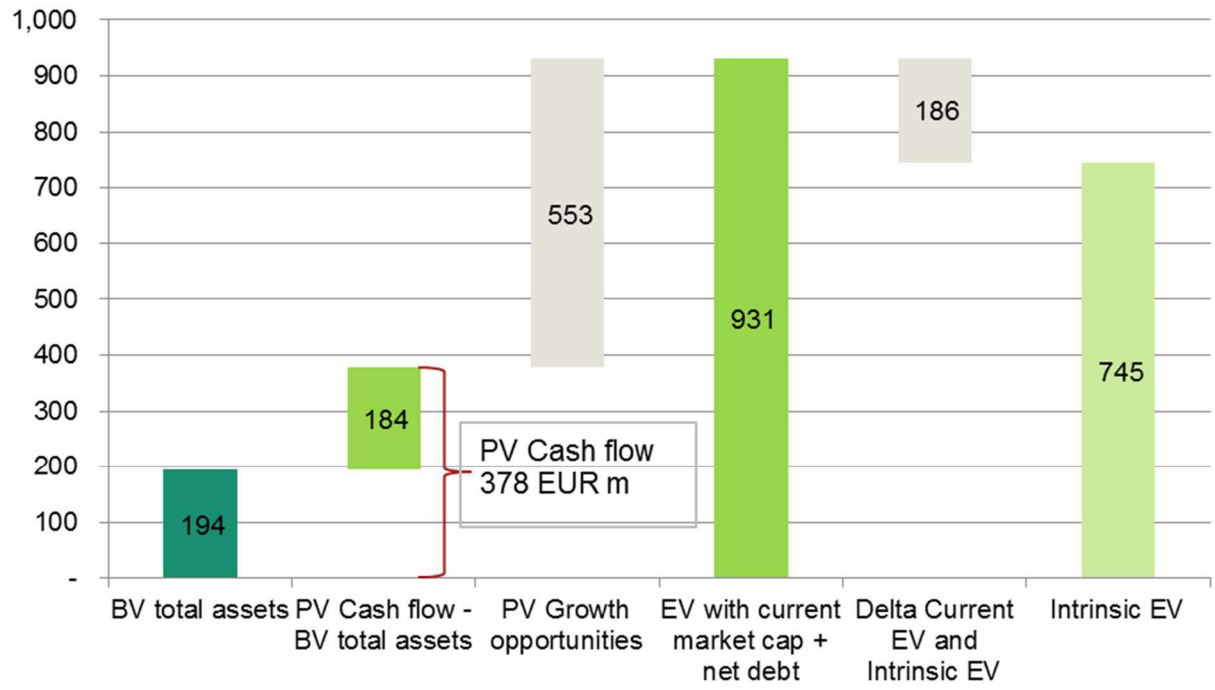
Source: Factset, Team analysis

Appendix **C.IX** – Forecasting precision of Melexis' Senior Management



Source: Factset, Team analysis

Appendix **D.I** – Value bridge from book value equity to intrinsic value equity as of Dec. 2013



Our basis for the value bridge is the total asset book value at the end of 2013. Then, we calculated the present value of the free cash flows by dividing the free cash flow of 2013 with the WACC. The difference between the current enterprise value (market capitalisation + net debt) and the present value of the free cash flows results in the growth opportunities inherent in the current share price. Our intrinsic enterprise value of Melexis is 186 EUR m less than the current market capitalisation plus net debt. This delta reflects an overvaluation of the Melexis stock.

Source: Annual report, Team analysis

Appendix **D.II** – Calculation of Fixed assets at the end of 2012

Net Property, Plant & Equipment	60.0
Intangible Assets	2.1
Fixed assets	**62.1**

Source: Annual report, Team analysis

Appendix **D.III** – Calculation of Net working capital at the end of 2012

Inventories	38.4
Cash and cash equivilants	25
Prepaid Expenses	1.2
Miscellaneous Current Assets	-
Accounts Receivables, Net	35.4
Other Receivables	12.9
Deferred Tax Assets	14.8
Other Assets	5.6
Working capital	**133.4**

ST Debt & Curr. Portion LT Debt	34.6
Accounts Payable	12.3
Income Tax Payable	3.6
Accrued Payroll	3.6
Miscellaneous Current Liabilities	8.4
Short term liabilities	**62.6**

Working capital	133.4
Short term liabilities	(62.6)
Net working capital	**70.9**

Source: Annual report, Team analysis

Appendix **D.IV** – Calculation of Net debt at the end of 2012

Cash and cash equivilants	(25.2)
Bank debt	37.0
Pension liabilities	-
Other interest bearing liabilities	-
Total net debt	**11.7**

Source: Annual report, Team analysis

Appendix **D.V** – Assumptions with the three different cases

Base case:

Assumption of parameters for base case	
Growth Automotive (2013-2018)	9.7%
Growth Non-Automotive (2013-2018)	-6.0%
Terminal value growth rate	1.5%
Terminal value EBITDA-margin	23.9%
WACC	9.3%

Bear:

Assumption of parameters for bear case	
Growth Automotive (2013-2018)	8.2%
Growth Non-Automotive (2013-2018)	-7.5%
Terminal value growth rate	1.5%
Terminal value EBITDA-margin	22.0%
WACC	9.3%

Bull:

Assumption of parameters for bull case	
Growth Automotive (2013-2018)	11.2%
Growth Non-Automotive (2013-2018)	-4.5%
Terminal value growth rate	1.5%
Terminal value EBITDA-margin	25.5%
WACC	9.3%

Source: Team analysis

Appendix **D.VI** – DCF-Valuation of the base case

EUR m Year	Actual 2012	Plan 2013	Plan 2014	Plan 2015	Plan 2016	Plan 2017	Terminal Value 2018
Sales	-	266.1	287.6	311.3	336.8	363.4	390.8
EBIT	**-**	**54.6**	**58.8**	**63.3**	**68.1**	**72.8**	**77.1**
Effective corporate tax rate	-	13%	13%	13%	13%	13%	13%
NOPLAT	**-**	**47.8**	**51.4**	**55.4**	**59.6**	**63.7**	**67.5**
+ Depreciation	-	16.1	16.1	16.1	16.1	16.1	16.1
+/- Change in NWC	-	(4.0)	(3.7)	(3.3)	(2.5)	(2.2)	(2.1)
- CAPEX	-	(25.0)	(16.2)	(16.5)	(16.7)	(17.0)	(17.2)
Free cash flow	**-**	**34.9**	**47.6**	**51.7**	**56.5**	**60.6**	**64.2**
Period in months (mid-year discounting)	-	*2.1*	*14.1*	*26.1*	*38.1*	*50.1*	-
Partial period factor	-	*18%*	*100%*	*100%*	*100%*	*100%*	*100%*
Terminal value growth							1.5%
WACC	-	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%
Present value factor	-	98%	90%	82%	75%	69%	886%
Present value of cash flow	**-**	**6.0**	**42.9**	**42.6**	**42.6**	**41.8**	**568.9**

Enterprise value	**745**
- Net debt	(10)
+/- Non operating assets / liabilities / investments in associates	-
Equity value	**735**
Shares outstanding in million	40.06
Price per share	**18.3**

Source: Team analysis

Appendix **D.VII** – DCF-Valuation of the bear case

EUR m Year	Actual 2012	Plan 2013	Plan 2014	Plan 2015	Plan 2016	Plan 2017	Terminal Value 2018
Sales	-	262.4	279.7	298.5	318.6	339.0	359.5
EBIT	**-**	**53.0**	**55.2**	**57.6**	**59.9**	**61.7**	**62.9**
Effective corporate tax rate	-	13%	13%	13%	13%	13%	13%
NOPLAT	**-**	**46.4**	**48.3**	**50.4**	**52.4**	**54.0**	**55.1**
+ Depreciation	-	16.1	16.1	16.1	16.1	16.1	16.1
+/- Change in NWC	-	(3.8)	(3.4)	(3.0)	(2.2)	(1.8)	(1.7)
- CAPEX	-	(25.0)	(16.2)	(16.5)	(16.7)	(17.0)	(17.2)
Free cash flow	**-**	**33.6**	**44.8**	**47.0**	**49.6**	**51.3**	**52.2**
Period in months (mid-year discounting)	-	*2.1*	*14.1*	*26.1*	*38.1*	*50.1*	-
Partial period factor	-	*18%*	*100%*	*100%*	*100%*	*100%*	*100%*
Terminal value growth							1.5%
WACC	-	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%
Present value factor	-	98%	90%	82%	75%	69%	886%
Present value of cash flow	**-**	**5.8**	**40.3**	**38.7**	**37.4**	**35.4**	**462.5**

Enterprise value	**620**
- Net debt	(10)
+/- Non operating assets / liabilities / investments in associates	-
Equity value	**610**
Shares outstanding in million	40.06
Price per share	**15.2**

Source: Team analysis

Appendix **D.VIII** – DCF-Valuation of the bull case

EUR m Year	Actual 2012	Plan 2013	Plan 2014	Plan 2015	Plan 2016	Plan 2017	Terminal Value 2018
Sales	-	269.8	295.6	324.4	355.8	389.2	424.4
EBIT	**-**	**56.3**	**62.4**	**69.2**	**76.7**	**84.4**	**92.3**
Effective corporate tax rate	-	13%	13%	13%	13%	13%	13%
NOPLAT	**-**	**49.3**	**54.6**	**60.6**	**67.1**	**73.9**	**80.8**
+ Depreciation	-	16.1	16.1	16.1	16.1	16.1	16.1
+/- Change in NWC	-	(4.3)	(3.9)	(3.6)	(2.8)	(2.6)	(2.5)
- CAPEX	-	(25.0)	(16.2)	(16.5)	(16.7)	(17.0)	(17.2)
Free cash flow	**-**	**36.1**	**50.5**	**56.6**	**63.7**	**70.4**	**77.1**
Period in months (mid-year discounting)	-	*2.1*	*14.1*	*26.1*	*38.1*	*50.1*	-
Partial period factor	-	*18%*	*100%*	*100%*	*100%*	*100%*	*100%*
Terminal value growth							1.5%
WACC	-	9.3%	9.3%	9.3%	9.3%	9.3%	9.3%
Present value factor	-	98%	90%	82%	75%	69%	886%
Present value of cash flow	**-**	**6.2**	**45.5**	**46.7**	**48.0**	**48.6**	**682.6**

Enterprise value	**878**
- Net debt	(10)
+/- Non operating assets / liabilities / investments in associates	-
Equity value	**868**
Shares outstanding in million	40.06
Price per share	**21.7**

Source: Team analysis

Appendix **D.IX** – Sensitivity value tables for the WACC and explanations

Cost of debt	Risk free rate				
	3.1%	**3.3%**	**3.5%**	**3.7%**	**3.9%**
3.0%	19.8	19.3	**18.8**	18.3	17.9
4.0%	19.5	19.0	**18.6**	18.1	17.7
4.9%	**19.3**	**18.8**	**18.3**	**17.9**	**17.5**
6.0%	19.0	18.6	**18.1**	17.7	17.3
7.0%	18.8	18.3	**17.9**	17.5	17.1

Beta	Market risk premium				
	4.0%	**4.5%**	**5.0%**	**5.5%**	**6.0%**
1.00	23.1	21.5	**20.0**	18.8	17.7
1.10	21.8	20.2	**18.8**	17.6	16.5
1.14	**21.3**	**19.7**	**18.3**	**17.1**	**16.1**
1.20	20.6	19.0	**17.7**	16.5	15.5
1.30	19.5	18.0	**16.7**	15.6	14.6

D/E ratio	Effective tax rate				
	10.0%	**11.3%**	**12.5%**	**13.8%**	**15.0%**
0.0%	17.9	17.6	**17.3**	17.0	16.8
5.0%	18.4	18.1	**17.8**	17.6	17.3
10.0%	**18.9**	**18.6**	**18.3**	**18.1**	**17.8**
15.0%	19.4	19.1	**18.8**	18.6	18.3
20.0%	19.8	19.6	**19.3**	19.0	18.8

Source: Team analysis

Appendix **D.X** – Sensitivity value tables for the main value drivers of the DCF-valuation and the drivers SG&A growth and CAPEX growth

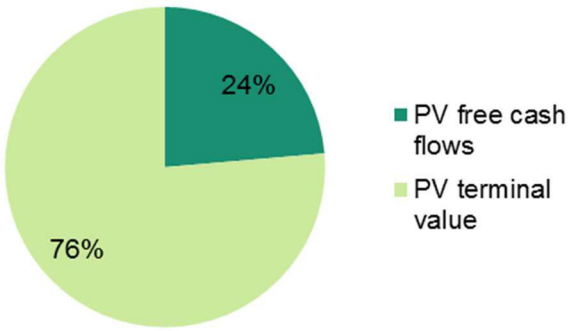
TV EBITDA Margin	Change in sales growth				
	-2.0%	-1.0%	0.0%	1.0%	2.0%
20.0%	13.3	14.4	15.4	16.5	17.7
22.0%	14.7	15.8	16.9	18.1	19.4
23.9%	15.9	17.1	18.3	19.6	21.0
26.0%	17.4	18.7	20.0	21.3	22.8
28.0%	18.7	20.1	21.5	22.9	24.5

WACC	Terminal Value Growth				
	0.5%	1.0%	1.5%	2.0%	2.5%
7.5%	21.3	22.6	24.1	25.9	28.0
8.5%	18.5	19.4	20.5	21.8	23.2
9.3%	16.7	17.4	18.3	19.2	20.3
10.5%	14.6	15.1	15.8	16.5	17.2
11.5%	13.2	13.6	14.1	14.6	15.2

CAPEX growth	SG&A growth rate				
	7.0%	8.0%	9.0%	10.0%	11.0%
0.5%	20.9	19.8	18.6	17.3	16.0
1.0%	20.8	19.7	18.5	17.2	15.9
1.5%	20.7	19.5	18.3	17.1	15.8
2.0%	20.6	19.4	18.2	17.0	15.7
2.5%	20.5	19.3	18.1	16.9	15.6

Source: Team analysis

Appendix **D.XI** – The terminal value accounts for about 76% of the total enterprise value



Source: Team analysis

Appendix **D.XII** – Deal table of the most suitable deals

Announced Date	Completed Date	Target Company	Bidder Company	Seller Company	Reported Revenue Multiple Y1	Reported EBIT Multiple Y1	Reported EBITDA Multiple Y1	Deal Description	Deal Value EUR(m)
05/08/2012	31/10/2012	ASML Holding N.V. (5% Stake)	Taiwan Semiconductor Manufacturing Co		2.8	9.5	8.7	Taiwan Semiconductor Manufacturing Co has agreed to acquire a 5% stake in ASML Holding N.V. ASML Holding N.V. (AH), the listed Netherlands based company headquartered in Veldhoven, Noord-Brabant, is engaged in designing, manufacturing, marketing, and servicing semiconductor processing equipment. Taiwan Semiconductor Manufacturing Co (TSMC), a listed Taiwan based company headquartered in Hsinchu is a manufacturer of high-demand semiconductor devices required for cell phones, lap and desk-top computers, hand-held devices and other popular digital electronic applications.	838
08/09/2010	08/09/2010	Phyworks Limited	Maxim Integrated Products, Inc.	Advent Venture Partners; Add Partners Limited; Atlas Venture L.P.; DFJ Esprit LLP	4.8	25.3	24.0	Phyworks Ltd., the UK based developer of high-speed communications chips, has been acquired by Maxim Integrated Products, Inc., the listed US based developer, manufacturer, and distributor of semiconductor products, for a cash consideration of USD 72.5m.	54
02/08/2010	02/02/2010	Eems Test Singapore Pte Ltd	Advanced Semiconductor Engineering Inc	EEMS Italia SPA	1.6	27.8	4.2	Advanced Semiconductor Engineering Inc, the listed Taiwan based company engaged in supplying semiconductor assembly services, has agreed to acquire Eems Test Singapore Pte Ltd, the Singapore based provider of wafers sort and final test solutions for semiconductor companies, from EEMS Italia SPA, the listed Italy based provider of back-end manufacturing services for semiconductor manufacturing companies, for an enterprise value of USD 67.7m for cash.	51
01/09/2008	14/10/2008	QP Semiconductor	e2v Holdings Inc		2.7	7.7		e2v Holdings Inc, the US based technology firm and a subsidiary of e2v Technologies Plc, the listed UK based technology components and sub-systems provider, has acquired QP Semiconductor Inc, the US based designer and supplier of semiconductor components, for an initial cash consideration of USD 65m.	44
				Median	**2.7**	**17.4**	**8.7**		

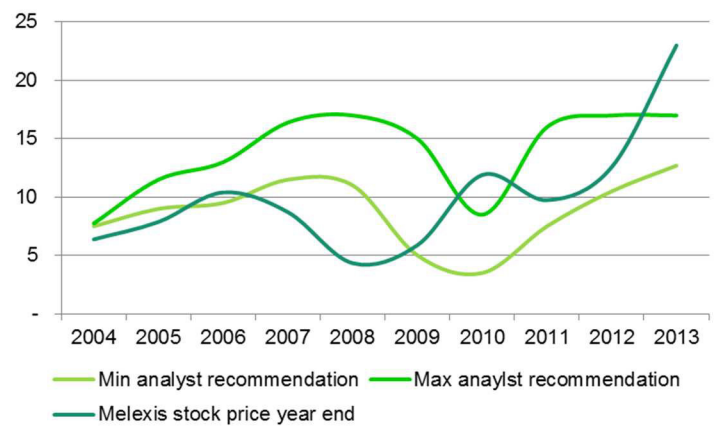
Source: Merger market, Team analysis

Appendix **D.XIII** – Growth opportunities

For this analysis we downloaded the WACC, FCF, and the EV from Bloomberg of the last 5 years. For the free cash flow, we used a five year median in order to offset one-time effects. For the WACC, we used a three year median and for the EV, we used the most recent one available.

Source: Bloomberg, Team analysis

Appendix **D.XIV** – Target prices vs. Melexis actual stock performance



We created a bandwidth of the minimum and maximum target prices with a twelve months horizon that analysts recommended and compared those to the actual stock price twelve months later. We found that the analyst with the minimum recommendation were most of the time right. Only exception is during the crisis 2009 and 2010. The current stock price is 35% higher than even the most positive analyst recommendation (17 EUR per share) Even though analysts start to correct there target prices upwards, we see a clear tendency for a sell recommendation.

Source: I/B/E/S, Team analysis

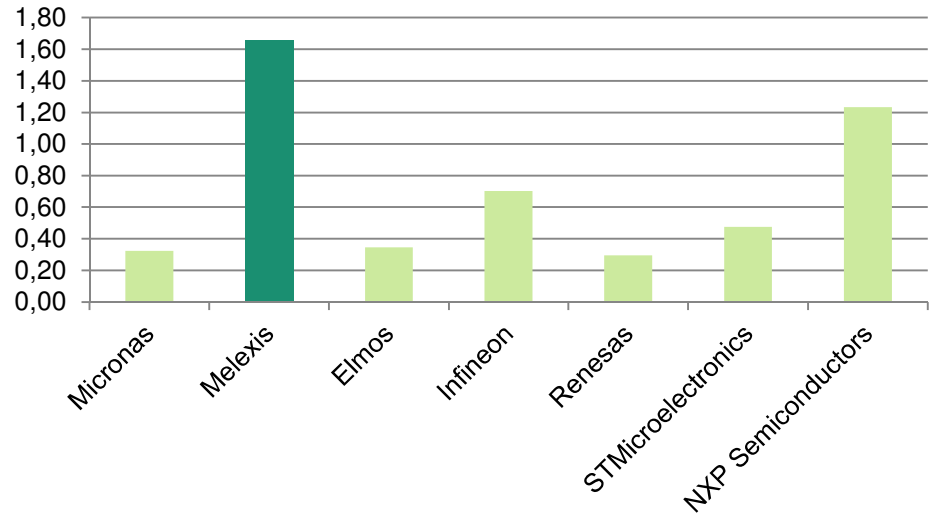
Appendix **D.XV** – Sum of the parts valuation

Segment	Valuation Method	Fraction of total EBITDA	EBITDA per segment	Trading Multiple* Low	Median	High	Transaction Multiple**	Enterprise Value (EURm) Low	Median	High
Automotive	2012 EBITDA	89,79%	$63,8	1,3x	5,5x	6,6x		83,0	351,0	421,2
Non-automotive	2012 EBITDA	10,21%	$7,3				8,7x	62,8	62,8	62,8
Total Firm Value								**145,8**	**413,8**	**484,0**
Less: Net Debt								-11,7	-11,7	-11,7
Total Equity Value								**134,1**	**402,1**	**472,3**
Fully Diluted Shares Outstanding (in millions)								44,0	44,0	44,0
Sum of the parts Equity Value								**3,0**	**9,1**	**10,7**
Current Share Price								23,1	23,1	23,1
Premium/(Discount) to Market								*(86,8%)*	*(60,4%)*	*(53,5%)*

*** EV/EBITDA Trading multiples of peers** (automotive semiconductor industry): **Low** (Micronas Semiconductor), **Median** (Peer group median), **High** (Infineon Technologies AG)
**** EV/EBITDA Transaction multiple:** based on the transaction multiple paid during the acquisition of ASML Holding N.V. by Intel Corporation in Sept 2012

Source: Bloomberg, Merger markets, Team analysis

Appendix **D.XVI** – PEG comparison



Source: Bloomberg, Team analysis

Appendix **D.XVII** – Parameter Definition of Distributions and description of Monte Carlo Free Cash Flow model approach

	Chosen distribution	Mean*	Standard deviation**
Revenue growth rate 2013 (Automotive)	Normal	11.0%	2.0%
Revenue growth rate 2014 (Automotive)	Normal	10.5%	2.0%
Revenue growth rate 2015 (Automotive)	Normal	10.0%	2.0%
Revenue growth rate 2016 (Automotive)	Normal	9.5%	2.0%
Revenue growth rate 2017 (Automotive)	Normal	9.0%	2.0%
Revenue growth rate 2018 (Automotive)	Normal	8.5%	2.0%
Revenue growth rate 2013 (Non-automotive)	Normal	-10.0%	2.0%
Revenue growth rate 2014 (Non-automotive)	Normal	-8.0%	2.0%
Revenue growth rate 2015 (Non-automotive)	Normal	-6.0%	2.0%
Revenue growth rate 2016 (Non-automotive)	Normal	-4.0%	2.0%
Revenue growth rate 2017 (Non-automotive)	Normal	-4.0%	2.0%
Revenue growth rate 2018 (Non-automotive)	Normal	-4.0%	2.0%
Expected WACC	Normal	9.3%	1.0%

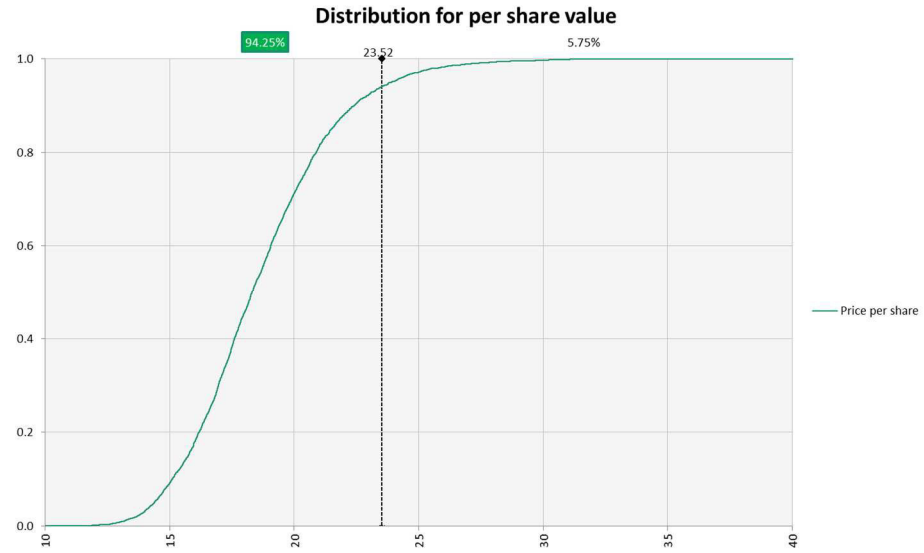
* Mean of the normal distributions of the stochastic inputs are equal to the team estimates of the specific input factor.
** Standard deviation was determined by looking at historical standard deviation and/or analyst estimates

Incorporating the uncertainty of the real world into our DCF model yields better results given that we cannot know the "correct" value of the model inputs with absolute certainty. Thus, we used a Monte Carlo FCFF model, which shows the complete probability distribution of all possible fundamental values and not only a single fundamental value as the standard DCF model does. This approach especially makes sense as revenue growth forecasts over multi-year periods are highly uncertain and looking at ranges of specific model input values will give a more realistic picture of the intrinsic value of a company.

Monte Carlo Simulation Output	
Minimum Price per Share	11.42
Maximum Price per Share	37.51
Mean	18.63
Mode	17.46
Median	18.31
Std Dev	2.95
Skewness	0.77
Kurtosis	4.43
Iterations	5,000

We assumed revenue growth rates for the period 2013-2018 and the WACC value to be stochastic, i.e. each of these input factors can be viewed as a set of independent random variables representing from a normal distribution with a specific mean and standard deviation. Moreover, all stochastic variables are assumed to be independent of each other. Other input factors, such as the terminal growth rate, future CAPEX requirements, depreciation, changes in NWC are assumed to be deterministic. 5000 iterations were chosen for the Monte Carlo Simulation run. For each of the 12 growth rates as well as the WACC, values were randomly drawn from the underlying normal distribution with the respective mean and standard deviation during each of the 5000 iterations.

Appendix **D.XVIII** – Cumulative probability distribution of the estimated per share value of Melexis



Source: @Risk, Annual reports, Team analysis

Appendix **E.I** – Minor Risk factors

Assessment of Risks			
	Risks	General Description	Team estimate of impact on Melexis
Operational Risk	**Merger or acquisition failure**	Melexis acquires businesses, technologies and product lines from time to time. If the management overpays for acquired companies or fails to effectively integrate these into the corporate structure, this could result in a decreased production, higher costs and lower earnings or a dilution of current shareholders' shares in the company. Moreover, if the acquired company operates at lower margins (gross, operating, net margins), the overall margins of Melexis will suffer.	Melexis is not planning to merge with or acquire any company as of Q313, substantially decreasing this risk. Historically, Melexis has done very few and selective acquisitions.
	Dependence on suppliers	Melexis outsources most of its manufacturing to suppliers under subcontracts ("fabless" business model). Risks faced by Melexis include the lack of control over the production process , delivery schedules and decisions of relocation of production capacity. This could lead to shortages in the production capacity, which might delay the introduction of new products and the timely delivery of products to customers. Besides, if one of Melexis' main suppliers experiences financial troubles, it will not be able to service contractual obligations towards Melexis.	Melexis tries to reduce this risk by mainly ordering from related parties (e.g. X-Fab, from which Melexis orders 55% of COGS). Moreover, Melexis diversifies its supply chain by ordering from 2 different Asian wafer producers. In addition, Melexis employs strict quality controls to monitor its suppliers.
	Product obsolescence	Melexis operates in a fast-developing industry; if the company fails to design and develop new innovative products fast enough (especially in comparison to competitors) and fails to bring them to the market in a timely manner, inventory write-offs and a subsequent profit reduction will be inevitable.	Despite Melexis best selling product (sensors) being focused on the Hall effect, the team estimates the development of a cheaper and more effective sensor based on a different technology as low to moderate.
	Patent expirations/ protection and enforcement of intellectual property rights	Melexis might be accused of infringement of other companies' patents or might be itself victim of infringement of one of its patents; higher costs due to expensive trials will decrease Melexis' operating result.	Melexis is well-protected against copyright infringement. For instance, Melexis won a patent infringement lawsuit against its Triaxis patent by Austriamicrosystems (AMS) in Dec 2010.
	Melexis operates in cyclical markets	As a manufacturer in the automotive semiconductor industry, Melexis operates in a business environment, which is highly dependent on global demand of the automotive industry. The non-automotive business segment of Melexis is also dependent on global demand for sensors and actuators; however, based on historical data, the non-automotive business segment is not as cyclical as the automotive business segment.	The team estimates this risk to be low; even during the crisis of 2008-2009, Melexis' gross margin only slightly decreased in comparison to competitors.
	Overreliance on too few customers	Melexis is highly dependent on certain customers; for instance, the company's biggest customer contributes to 17% of total sales. If one of the main customers gets into financial trouble and/or refuse to pay for services/products already delivered by Melexis, firm's baseline financial results will suffer.	Melexis has reduced its exposure to main customers: the percentage of revenues, which are accounted for by the 10 biggest customers, was reduced from 70% (1997) to a current 51% (2012). In addition, the CEO of Melexis mentioned during her presentation that Melexis has never lost a client.
	A weak product pipeline	If Melexis fails to continously improve its products and/or to develop new products, Melexis brand recognition within the industry will be negatively impacted resulting in a potential loss of market share for Melexis.	Melexis is a market leader for Hall effect based sensor technique and heavily invests in its research efforts. That being said, the team estimates this risk to be low to moderate.
	Credit risk	If one of Melexis' counterparties defaults, Melexis could suffer severe financial losses due to non-fulfillment of contractual obligations by the defaulted counterparty.	Melexis has no significant concentration of credit risk with any single counterparty. Moreover, Melexis has a policy to make sales only to new and existing customers with a good credit history.
	Interest rate risk	Melexis' liabilities are mainly compromised of floating debt. If the interest rate increases in the future, Melexis will have to pay higher interest expenses, which will decrease its earnings.	Melexis use derivatives to hedgeits interest rate exposure of its outstanding bank debt. Hence, the interest rate risk of Melexis is minimal.
	Liquidity risk	If Melexis' customers are not able to settle contractual obligations towards Melexis within the normal terms of trade, Melexis will not receive payments in time, which could in turn, put pressure on Melexis to settle its own obligations.	Melexis periodically assesses the financial viability of customers in order to manage liquidity risk.
Technological Risk	**Failure of Melexis's information systems keeping up with growth**	Melexis follows a strategy of internal growth; this implies that the company has to expand and maintain its information systems (in particular, the ones used for controlling and managing the supply chain) in order to support organic growth. Should Melexis fail to expand its information systems or should the information systems prove inappropriate/flawed, this could translate into a significant obstacle for the organic expansion of the company and reduce/ hinder internal growth altogether.	This risk is negligible in the view of the team as Melexis can easily scale up its operations in Europe in order to faciliate higher growth.
Political Risk	**Change in regulations with regards to emissions and efficiency of cars**	If regulations should change and would allow higher emissions, the potential uses of Melexis' products will be severely decreased leading to lower demand for its products and thus, a decrease in revenue.	Given current trend to enhance environmental protection, improve efficiency and stricter regulations regarding emissions, this risk should be minimal.
	Nationalization of Melexis's or one of its suppliers' (production) assets	Melexis has its products manufactured in Asia; if parts of its suppliers' production assets are nationalized, suppliers will not be able to deliver all products ordered by Melexis, potentially disabling the planned production schedule of Melexis and delaying delivery of Melexis' products to its clients.	Most of Melexis' research facilities are located in Europe with low nationalization risk.

Source: Team analysis

Appendix **E.II** – Risk Matrix

No impact → Severe impact

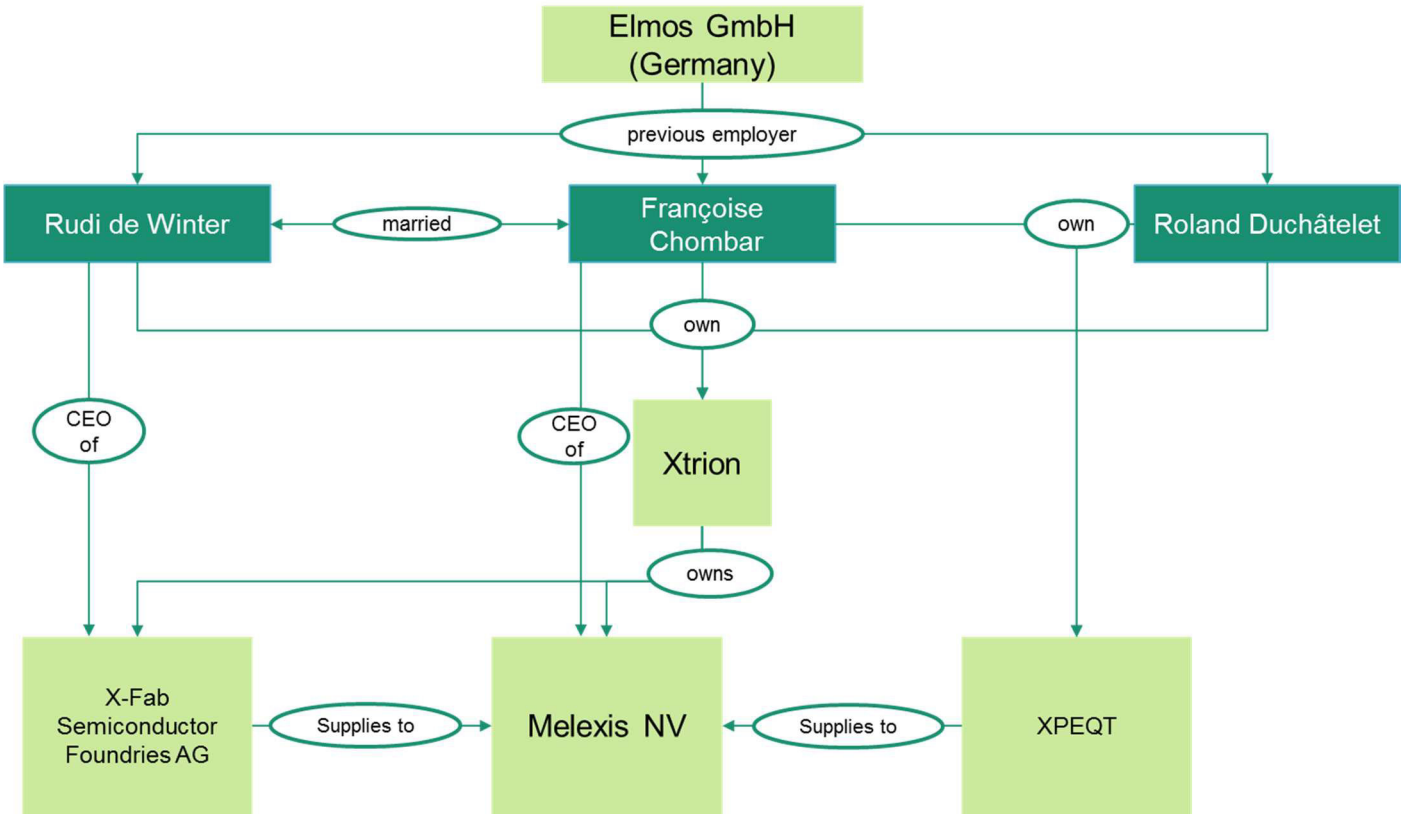
High Probability ↑ Low Probability

		Currency fluctuations	**Melexis' corporate structure creates agency conflicts between owners and outside shareholders**	
	Merger or acquisition failure	**A weak product pipeline/defects in products being delivered to customers or lack of quality of products**	**Dependence on key personal and ability to recruit/ retain qualified personal**	**Defects in products being delivered to customers due to lack of quality of products**
Nationalization of production assets	**Failure of Melexis' information systems keeping up with growth**	**Product obsolescence**	**Agency conflicts between owners and outside shareholders**	**Patent expirations/ protection and enforcement of intellectual property rights**
Dependence on suppliers	**Melexis operates in cyclical markets**		**Change in regulations with regards to emissions and efficiency of cars**	**Overreliance on too few customers**

Political Risk	**Technological Risk**	**Operational Risk**

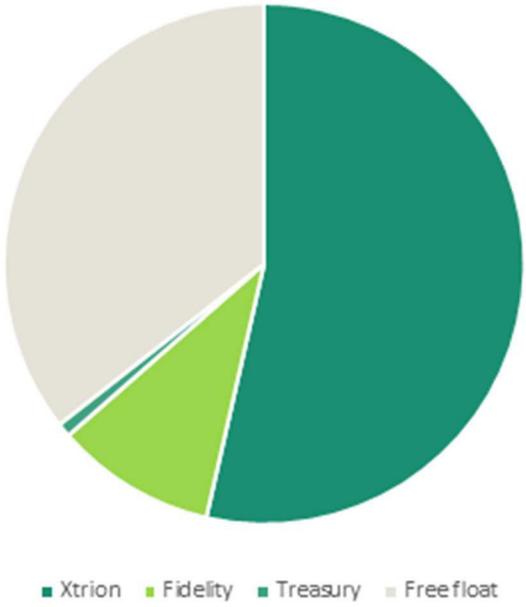
Source: Team analysis

Appendix **F.I** – Who runs and owns Melexis?



Per 31th October 2013 there are 40.4 m voting shares of Melexis outstanding, of which the voting majority of 53.6% is owned by Xtrion. This company is owned and operated by Mrs. Françoise Chombar, Mr. Rudi de Winter and Mr. Roland Duchâtelet.

The board of directors consists of Mr. Roland Duchâtelet, Ms. Françoise Chombar, Mr. Rudi De Winter, Mr. Shiro Baba, Ms. Lina Sarro and Ms. Jenny Claes. The last three are independent with long experience in the semiconductor industry or logistics. Mr. Roland Duchâtelet chaires the board and has been a member of it ever since 1994. Mrs. Françoise Chombar is the only actively managing director serving as the CEO and Managing Director since February 2011, performing the functions of a COO as well. She has been COO since 1994. Her husband, Mr. Rudi de Winter, was CEO of Melexis until February 2013 and left to become CEO of X-Fab, a company Xtrion holds a major stake of 59% in and has been a major supplier of Melexis in the past. Melexis purchased goods and services of 73 EURm of X-Fab last year. The main responsibilities of the Board of Directors are giving strategic direction to Melexis and supervising the state of affairs within Melexis. According to Belgium law one third of the Board of Directors are of a different gender and three of them are independent.



The executive management is conducted by the CEO, the CFO, 4 business unit managers and five global managers, led by the CEO. The Executive Management has the operational accountability for leading the company in accordance with the global strategy, vision, mission and values, and with the planning and budgets approved by the Board of Directors. The Executive Management is also responsible for screening the various opportunities and risks the company might encounter in the short, medium or longer term, as well as for ensuring that systems are in place to address these opportunities and risks. The Business Unit Managers are responsible for developing the business across the regions and focus on our customers' interests and future business development in the four business units Sensors, Actuators, Opto and Wireless. The Global Managers are responsible for functional excellence and compliance in Development, Operations/IT, Quality, Sales/Marketing and Human Resources.

The CEO can represent the company in daily actions by her sole signature, while actions outside the daily management scope can be conducted by two directors acting jointly.

The Board of directors does not receive performance related payments and the executive management has a performance related pay of maximum 25%, with the exception of the CEO. The CEO can earn up to 50% performance related. The performance related payouts are only made in cash. There are no additional performance related incentives such as options or stocks. Only the CEO gets evaluated on a longer time horizon than one year, but only up to three years. The performance related payouts depend on the performance against financial targets regarding revenue and EBIT growth. In 2012 the CEO received 250,000 EUR fixed and 62,500 variable. The rest of the executive management team received 675,915.5 EUR and 121,318.23 EUR.

Apart from her share in Xtrion Mrs. Françoise Chombar owns 40% XPEQT Group, while the rest is owned by Mr. Roland Duchâtelet. Melexis purchased services and goods from XPEQT Group for 5 MM EUR. There are more affiliates, the company does business with, like the parent Xtrion itself for instance. XPEQT and X-Fab are the most relevant ones looking at 2011/2012 data.

Taking into account the major influence Mrs. Chombar, Mr. Duchâtelet and Mr. de Winter have as majority shareholders, as half the Board of Directors and as CEO, a new shareholder must be aware that the interests of those persons are not necessarily in line with their interests. This possible conflict of interest is strengthened and at the same time more likely as X-Fab, as a major supplier, and XPEQT, as another supplier, are partially or wholly owned by the three aforementioned persons and Mr. de Winter is additionally the CEO of X-Fab and married to the Ms. Chombar. The company addresses this issues as follows: "The Board of Directors and the Audit Committee have reviewed and analyzed the major transactions [with related parties] and concluded these transactions are within the normal course of business and that there are sufficient elements to conclude that the remuneration is based on arm's length principles. (Annual Report 2012)" There is no statement of the auditor BDO found regarding this matter.

In our opinion this possible conflict of interest, even though communicated openly, together with a variable remuneration of executive management, not based on share performance and rather low compared to fixed income, lead to a need for shareholders to monitor the situation intensely.

Source: Annual reports, Team analysis

Appendix **F.II** – Belgian Corporate Governance Code

Corporate Governance methodology: We estimated the quality of Melexis' corporate governance by applying a score of Melexis' compliance with respect to each of the Code's main principles. Each of the 9 principle is judged on a scale of 1-10. Melexis' **final score is 7.9** indicating a high compliance with the Belgian Corporate Governance Code.

However, we identified substantial problems with regards to Melexis corporate structure, which could potentially decrease interest alignment between the management and the outside shareholders. Moreover, Melexis' management provides little guidance with regards to its intended use of its excess cash balance, which is not aligned with good corporate governance.

		Full Score (10/10) if:	Team comment	In compliance with Belgian Corporate Governance Code?	GC Score for each Principle	Weighting as determined by team
Principle 1	The company has a clear corporate governance structure.	• Tasks and responsibilities of the board of directors are known.	Melexis clearly states the tasks and responsibility of the board of directors in its Annual report.	Yes		
		• There must be a clear disctinction between the CEO and chairman of the Board of Directors.	Melexis is in compliance: Chairman of the Board of Directors is Mr Roland Duchâtelet, while Mrs. Chombar is the CEO.	Yes	**10/10**	**10%**
Principle 2	The company has an effective and efficient board of directors, which makes decisions that are in the interest of the overall company (stake- and shareholders).	• The size of the board of directors. The Belgian Corporate Governance code states that the size of the board should not be extremely large nor extremely small and in line with the size of the company.	Median size of all companies following the Belgian Corporate Governance Code is 9. Given Melexis small company size, the board size of 6 members is appropriate.	Yes		
		• Each of the listed company should make clear how their board composition looks like.	Board composition is cleary stated in the Annual Report.	Yes	**10/10**	**10%**
		• The board should be diverse in terms of gender, age and nationality.	There is no age limit for directors and no discrimination in terms of nationality. Melexis actively promotes gender diversity by implementing an internal policy, which requires one third of its board members to be of different gender as of 1 January 2017.	Yes		
Principle 3	All directors show integrity and devotion.	• The Code states that there should be a clear description and transparency about possible conflicts of interest.	Melexis describes potential conflicts of interests with regards to related parties transactions. However, a potential conflict of interest could arise through the marriage of Melexis' CEO, Mrs. Françoise Chombar, with Mr. De Winter, who is a private shareholder of Melexis and CEO of X-Fab, the largest supplier of Melexis. While there is no sign of a current existence of a conflict of interest, Melexis does not fully disclose the probability of a future occurence.	Partial Compliance	**4/10**	**25%**
		• In accordance with the Code, the company's compliance with the Belgian provisions on insider trading and market abuse should be outlined.	Melexis complies with the Belgian provisions by keeping a list of all employees with managerial responsibilities and/or access to share price sensitive information. Moreover, the Melexis Insider Trading Policy is part of the Annex of the Melexis Corporate Governance Charter.	Yes		
Principle 4	The company has a rigorous and transparent procedure for the selection and evaluation of the board and its members.	• A board term must not be longer than 4 years.	Melexis Corporate Governance Charter states that the board term may not exceed 4 years.	Yes	**10/10**	**5%**
Principle 5	The board of directors has set up specialized committees within the company.	• For each committee, there must be an internal regulation.	Internal regulation for each of the committee is set up and described in the Annual Report.	Yes		
		• An audit-, remuneration and nomination committee must be present in the company.	All 3 committees exist at Melexis. However, Melexis' chairman of the board of director is also chairman of the Audit Committee, contrary to the Code. In addition, meetings of the Audit committee are scheduled no less than twice and those of the Numeration committee no less than once a year, contrary to the recommendation of the Belgian Corporate Governance Code of 4 meetings and 2 meetings a year, respectively.	Partial Compliance	**6/10**	**15%**
Principle 6	The company has set a clear structure for the executive management.	• The structure of the executive management must be clear. It must be clear what its responsibilities and tasks are.	Structure, responsibilities and tasks of Melexis' executive management are clearly described in Annual report.	Yes	**10/10**	**10%**
Principle 7	The company's remuneration scheme for the board of directors and executive management is set up in an honest and responsible way.	• The company should publish sufficient information about their compensation scheme.	A detailed description of the remuneration scheme is provided in the Annual Report.	Yes		
		• Non-executive directors must not receive any performance related compensation such as bonuses or stock related incentive programs.	Independent directors receive a fixed annual remuneration of EUR 15.000 and reimbursement of costs to attend the board and/or committee meetings.	Yes	**10/10**	**10%**
Principle 8	The company has a clear dialogue and mutual understanding with its shareholders.	• There should be a formal website.	In compliance, www.melexis.com.	Yes		
		• There should be general meetings with the shareholders.	Melexis organises every year a General meeting with all shareholders of the company.	Yes	**10/10**	**5%**
Principle 9	The company has a suitable publication with regard to its corporate governance.	• Each listed Belgian company should have a CG-Charter and where the most important corporate governance aspects should be described.	Melexis publishes an extensive Corporate Governance Charter on its website with detailed description of the corporate governance procedures.	Yes	**10/10**	**10%**
				Weighted total score =	**7.9**	**(out of 10)**

Source: Melexis Corporate Governance Charter, Annual reports, Team analysis

Appendix **F.III** – Corporate Social Responsibility

CSR Issues	CSR Targets
Environment	Sensor technology provided by Melexis greatly enhances energy efficiency.
Safety	Hall Sensors greatly enhance the safety of cars and other products.
Employees	Programmes exist to foster internal talent.

Source: Team analysis

Appendix **G.I** – Events graph for Melexis

The green box indicates, if a dividend, marked by D, a share buyback, marked by S, or both, marked by D/S, were conducted. In year 2013 there has been no share buyback due to the high share price and no guidance regarding the dividend policy.

Source: *Bloomberg, Annual reports, Team analysis*

H. List of abbreviations

b: Billion, for example EURb

EUR: Euro currency

m: Million, for example EURm

USD: US Dollar