NOVA SCHOOL OF BUSINESS & ECONOMICS

Applied Corporate Finance

Infineon Technologies

Class-Case Discussion

Rui Silva

Plan Of Attack

- Background
- Proposed Solution/Discussion of the Case
- What Happened?

Background Of Case: Infineon

- The case is set in 2011
- Infineon is reviewing its financial policy
- The company is sitting on net cash of €2.4bn, corresponding to about 40% of assets
- Three main issues to discuss/decide:
  - Should the company distribute some of this cash to shareholders?
  - If so, how much?
  - If so, in what form?

Infineon Technologies AG

- Infineon designs, manufactures, and produces semiconductor products
  - Main Applications: Automotive, Industrial, Consumer, Security

- The company was organized in three units:
  - Automotive (ATV – 39% of sales)
  - Industrial and Multimarket (IMM – 45% of sales)
  - Chips Card & Security (CCS – 11% of sales)

- Production was divided between Europe and Asia due to:
  - Costs, capabilities, and technological complexity

- Sales are global

Infineon shared the sector's main traits

- Cyclicality
  - **Figure 1**– semiconductors move in the same direction as the economy but exacerbate the movements
  - **Footnote 1** – average beta 1.5 (1.2 for Infineon)
  - **Figure 2** – a 1% increase in World GDP leads to about 10% increase in Infineon's revenue

- Why so cyclical?
  - Demand: cars, computers, phones, etc are all cyclical
  - High fixed costs (*operating leverage*): profits react strongly to changes in demand
  - Bullwhip effect: in good times, customers stockpile inventory due to fears of supply shortages – semiconductors are an essential component, but account for only a small fraction of the cost of the final product.

Infineon shared the sector's main traits (cont'd)

- Capital intensity
  - High Capx requirements (e.g., €887m in FY2011, 22% of revenue, **p. 3**)
  - High R&D expenses (e.g., €439m in FY2011, 11% of revenue, **p. 2**)
  - M&A to build or buy capacity in manufacturing technology
  - The cost of fabs and equipment is enormous, e.g., the DRAM fab in Dresden cost €1.1bn in 2001 (**p. 3**).

- Long lead times
  - Takes 2-3 years to set up a cleanroom (**p. 2**)
  - Takes another 2 to 18 months to equip it (**p. 2**)
  - Flexibility in the short run is very limited/inexistent

Infineon shared the sector's main traits (cont'd)

- Fast paced innovation
  - For example, on-chip power doubles every decade (**p. 2**)
  - Another example: fraction of chips produced that are operational increased from 10-30% in the 1980s to 80-90%.
  - Sidenote: Moore's law, which you may have heard of, named after Gordon Moore, a co-founder of Intel, says that the number of transistors of a chip will double every 2 years. This does not apply to power semiconductors, which is Infineon's main product.

- Intense competition
  - Competition is fierce, especially in periods of overcapacity
  - Cost pressure is likely why production is in Asia
  - This is also a key driver of the innovation pressure

What does Infineon need to compete?

- Infineon needs to…
  - Invest in CAPX (and maybe M&A), through the cycle
  - Invest in innovation through R&D (and maybe M&A), through the cycle
  - Achieve scale in key markets
  - Defend IP
  - Cultivate customers

Infineon's Operating Performance

- Excellent now… but terrible in the crisis + restructuring
- Very highly cyclical!
- Data from **Exhibit 3**

Profits	2008	2009	2010	2011
Sales	3,903	2,184	3,295	3,997
Sales growth		-44%	51%	21%
Net income	(2,935)	(626)	659	1,119
Net income growth		79%	205%	70%
Margin	-75%	-29%	20%	28%

Returns	2008	2009	2010	2011
ROE = NI/Shareholder's Equity	-136%	-30%	25%	33%
ROA = NI/Assets	-42%	-14%	13%	19%

Current Capital Structure

- Sept 2011: €2.4bn in net cash (= €2.7bn cash – €300m debt) **[Ex. 3]**
  - 40% of assets (€5.9bn) and market cap (€6bn = 5.59 * 1,087) **[Ex. 3 and footnote 20]**
  - 2.7 yrs of CAPX (FY11 €887m) or 5.5 yrs of R&D (FY11 €439m)
- Low debt + High cash: Historically **[Fig. 4]** and vs. peers **[Fig 5]**

Ratios	2008	2009	2010	2011
Net Debt = STD+LTD−Cash	278	-657	-1,331	-2,387
Net Debt/Book Equity	13%	-31%	-51%	-71%
Net Debt/Mkt Equity	9%	-16%	-24%	-39%
Interest Coverage	-0.37	-3.45	5.27	28.31
Current Ratio	1.42	1.83	2.23	2.19

Current Capital Structure (cont'd)

- What have been the main sources and uses of funds in the recent past?
  - We could do a proper DCF analysis of the different items. But for a quick picture one can compare the balance sheet in FY2011 to that in FY2009 **[Ex. 3]**

- Main sources of funds:
  - Profits + Sale of Wireless (Shareholder's equity increase by €1,262bn)
  - Accounts payable (€336m)

- Main uses of funds:
  - Cash (€1,185m)
  - Reduction in debt (€545m)
  - PPE (€415m)

Current Capital Structure (cont'd)

- Growth vs. Sustainable growth:
  - FY11: $g^* = (1 - d) \times ROE = (1 - 109 / 1{,}119) \times 33\% = 30\%$
  - Measure of equity growth that could potentially be achieved if no new investments (no new equity and no new debt) are made into the firm
  - Not that relevant given ROE's variability

Sustainable growth rate g*	2008	2009	2010	2011
Dividend payout ratio	0%	0%	0%	10%
g* = (1-d) × ROE	-136%	-30%	25%	30%
g (assets)		-37%	14%	18%

- What should be the target capital structure of Infineon?

Potential Pros of Debt

- Tax Shield
  - Low tax rate (for now): 10%-15%
    - Large Tax Loss Carry Forwards (TLCF) in Germany
    - Low tax rates in Asia
    - R&D tax credits
  - " Infineon had enjoyed single digit effective tax rates in the last two years." **[footnote 12]**

- Discipline/Governance
  - Solve the Free Cash Flow problem
  - Slack/over-investment/perquisite consumption
  - Are there significant governance issues in Infineon?

Potential Costs of Debt

- What is the main risk?
  - **Financial Distress**

- Costs of financial distress depend on probability of distress and costs if the company reaches distress

- Is the probability of financial distress high?

Probability of Financial Distress

- Volatility: Very high
- Cyclicality: Very high (even if lower post-restructuring)
  - Why do we care about cyclicality not just volatility?
- Technological risk: Very high
  - R&D is risky: Mistake or delay ➔ Fall behind competitors
  - Low Product innovation ➔ Obsolete + inventory value drops?
  - Low Process innovation ➔ Can have big cost impact
  - IP leakage

Probability of Financial Distress (cont'd)

- Competition risk: High risk despite current strong leadership + Entry of Chinese rivals?
- Currency risk: Chips priced in USD but costs mostly in EUR
- Legal: Quimonda bankruptcy + Patent infringement disputes
- Regulation/Taxes: Strategic ➔ Gvt role (R&D tax credits, subsidies)
- Bottom line:
  - Less risky without Memories and Wireless
  - But, business remains highly cyclical and risky
  - The main risks cannot be hedged easily

Distress Costs (1)

- What if the company enters into distress?

- Cutting investment has severe value implications:
  - Knowledge-based ➔ Must invest in intangible assets
  - Large upfront costs: R&D (€439m) + CAPX (€887m)
  - Scale economies ➔ Need organic growth + M&A
  - Long lead times ➔ Need to investing "through the cycle" (even when low profits)
  - Ability to invest in CAPX, R&D, market share (price, brand), hire/keep good people, do M&A is key

- Bottom line : No flexibility on investment

Distress Costs (2)

- Asset redeployability
  - Knowledge-based ➔ Infineon-specific assets
  - Large part of the value is in R&D, growth opportunities, ideas, projects in progress
  - Hard to value/sell/redeploy
  - In bad times there is overcapacity
  - Distress is correlated across industry peers → large fire sale discounts

- Competition: would rivals exploit this situation?
  - Competition is fierce
  - Rivals may become more aggressive if IFX unable to invest in R&D and CAPX

Distress Costs (3)

- Customers: will they care if the company enters into distress?
  - Yes!
  - Customers make IFX-specific investments (long-term exclusive relationships)
  - Long production cycle
  - ➔ Must be confident IFX will be around and healthy

- Employees: will they care
  - Human capital intensive business: R&D, process, etc.
  - Workers may enjoy working for a company that is a leader + may own shares and options
  - In distress firms tend to have difficulty attracting and retaining talented employees

Distress Costs: Conclusion

- If the company faces a cash shortfall, can it get out of it?
  - Maybe… but at great cost.
  - Potential buyers also constrained
  - History of equity issues at fire-sale prices
  - Even if the company survives, it may be in a worse position permanently if talented employees leave, customers and suppliers leave, and/or innovation is reduced

- If the firm takes on too much leverage
  - Probability of financial distress is high
  - Costs of financial distress are high

Bottom line

- Knowledge-based business (biotech, pharma, hardware)
  - Highly risky business
  - Huge distress costs if cannot fund crucial CAPX or R&D
  - Suggests a very conservative capital structure

- How conservative?
  - Maybe no debt, maybe even a lot of cash
  - But is there such a thing as too much cash?

How much cash should Infineon have?

Pros:

- Can guarantee investment in Capex and R&D (even in a downturn)
- Avoids going into distress
  - Less likelihood of fire sale discounts
  - Prevents loss of employees, customers, and suppliers
  - Prevents competitors from attacking after “smelling blood in the water”

Cons:

- Taxes
- Managerial discipline (the free cash flow problem)

How much cash should a company have? Tax implications

- Option 1: IFX invest €100 @3% for 1 year + pays out the proceeds
  - After 1 year, €3 interest subject to corporate tax @ rate tc =15%
  - Distribution (dividends/repos) -- Taxed @ average rate td
  - After-tax proceeds: $(1 - td) \times (100 + 3 \times (1 - 15\%))$

- Option 2: IFX payout €100 which shareholders invest @3% for 1 year
  - Distribution → Taxed at average rate td → Proceeds $100 \times (1 - td)$
  - After 1 year, $€3 \times (1 - td)$ interest subject to personal tax @ rate tp
  - After-tax proceeds: $(1 - td) \times (100 + 3 \times (1 - tp))$

- Distribution is tax-efficient if:
  - $tp < tc = 15\%$
  - Or, investors can obtain better return than the firm

How much cash should a company have? Governance implications

- Discipline: Will cash encourage sluggishness/complacency in the case of Infineon?
  - Competition + Cost-sensitive clients → Efficiency focus
  - Techno + Competition → Fast-changing → Reactivity is key
  - 2010 proxy fight: Mgt accused of shifting too slowly to Asia
  - Restructuring: Mgt is not change-averse (but was it too late?)

- Governance: Will cash allow mgt to pursue own goals?
  - Analysts concern about spending plans
  - Governance mechanisms: Board? Proxy fight? Takeovers? Pay?
  - Engineering driven culture (e.g. 2010 proxy fight) **[footnote 10]**
  - Paradigm shift: Would mgt concede defeat?

How much cash should a company have? Bottom line

- It is useful to think about cash as negative debt
- Some of the costs and benefits associated with cash holdings are the same as those of leverage but with the opposite sign.

Some misconceptions about cash holdings

- IFX should return cash to shareholders because…
  - Shareholders must be "rewarded" for their investment
    - Is payout necessary for this? Can't investors sell shares?
  - Otherwise, Infineon might become a takeover target
    - First, is this such a bad thing? Targets obtain large premiums, typically.
    - Second, why does cash make the deal appealing?
  - The return on cash is lower than Infineon's WACC
    - So what? Cash returns are also much less risky

Summing it all up

→ *Infineon should have **very low (negative) leverage***

Why?

Pros:

- Tax-shield? corporate tax rate — **OK**, but low
- Governance/Discipline? — **Maybe**.

Summing it all up (2)

Cons:

- *Are cash flows risky? Hard to hedge?* **Very.**
- *What if they got into financial distress?*
  - Need financial flexibility? **Yes.**
  - Assets hard to value/sell/redeploy? **Yes.**
  - Rivals more aggressive? **Yes.**
  - Customers/Suppliers care? **Yes.**
  - Employees care? **Yes.**

Payout

Three main questions to consider:

1. How much to pay out
2. How to pay out
3. When to pay out

→ What should Infineon do?

Current and Future Payout Policy

- 2000-09: No dividends

- 2010:

Dividend per share (DPS): €0.10 or €109m in total **[p. 5]**

- 2011: Payout €308m
  - Open market repurchase
  - Repurchase of convertibles (€173m)
  - Exercise of put warrants (€26m)

Standard Payout Methods

- Cash dividends:
  - Regular dividends
  - Special (onetime) dividend

- Share repurchase:
  - Open market repurchases: IFX buys its own shares over time
  - Fixed price tender offer: IFX offers to buy up to a set number of shares at a set price during a set time period
  - Dutch auction: Each shareholder can submit a price/quantity schedule; IFX picks the lowest price s.t. demand = supply

Why and when to pay out?

- Adjust to target C/S:
  - Too much Cash ➔ Seek to reduce Cash

- "Signaling":
  - Show to the market that the stock is undervalued
  - Question: Why does low stock price need to be fixed now?

- "Arbitrage", "Market timing":
  - Stock is undervalued ➔ Seek to buy stock "on the cheap"
  - Good for long-term shareholders (mgt included)
  - Question: How do we know the stock price is too low (not just low)?

Dividends vs. repurchases

- What are the standard payout options?
  1. Onetime share repurchase program
  2. Regular dividends: smaller, “regular” disbursements
  3. Onetime special dividend

- Taxes: Favor repurchases over dividends

- Clientele effects?
  - Dividend clienteles due to taxes, regulations, behavioral
  - Growth investors, income-oriented investors, mgt + employees (with stock, stock options)

Dividends vs. repurchases

- Transaction costs: higher in the case of repurchases (especially for small investors)

- Positive signal may be conveyed with both buybacks and common dividends, but maybe less so with special dividend.
  - Buybacks signal low stock price
  - Common dividends signal predictable earnings

Less Standard Payout Methods

- Alternative 1: Issue put-warrants, buy calls, or do both
  - FY11: Put options (€26m)

- Why would the firm do this?
  - Signaling: the firm is buying shares when the price is most depressed. This may signal the firm does not believe the price to go down.
  - Volatility trade (?): the Black-Scholes implied volatility is much higher for Infineon than it is for its peers
  - Commitment to payback

- Should the firm scale up this activity?
  - Risky to commit to pay out a lot in bad times

Less Standard Payout Methods

- Alternative 2: Convertible bond repurchase:
  - 2014 convert deep in-the-money

  ➔Trades as quasi-equity (like equity buyback)

  ➔However, unlike share buybacks, the loss is tax-deductible
  - What about volatility? Since the bond is deep in the money, the volatility doesn't affect its value that much – it trades like equity

What Happened?

What happened

- Management raised dividend per share to 12c
- Sept 2012:
  - European crisis
  - Stock down y-o-y 12% to €4.94 (vs. DAX up 31%)
  - Lower sales (−2%) + Similar R&D (€455m) + CAPX (€890m) ➔ NI drops 62% to €427m
  - Net cash down 19% to €1.94b
    - Debt mostly unchanged at €295m
    - Negative cash flow
    - Dividends €130m +Converts €62m + Puts €20m = €212m
  - Proposal to maintain DPS @12c

What happened

Infineon Technologies AG (IFX.DE)

Balance Sheet

All numbers in thousands

Period Ending	Dec 31, 2013
Assets	
Current Assets	
Cash And Cash Equivalents	472,000
Short Term Investments	1,807,000
Net Receivables	562,000
Inventory	654,000
Other Current Assets	46,000
Total Current Assets	**3,573,000**
Long Term Investments	55,000
Property Plant and Equipment	-
Goodwill	-
Intangible Assets	-
Accumulated Amortization	-
Other Assets	-
Deferred Long Term Asset Charges	323,000
Total Assets	**5,859,000**

What happened

- IFX announced (08/20/2014) it was buying International Rectifier for about $3bn (€2.25bn) in cash, a 47.7% premium, its largest acquisition to date. The deal should be completed in late 2014 or early 2015 subject to regulatory approvals.
- IFX will use its cash and €1.5bn credit facilities by Bank of America Merrill Lynch and Citigroup. IFX had long been under pressure to use its cash reserves of over €2bn for acquisitions or payouts.
- The California-based company's low-power, energy efficient chips would complement IFX's high-powered chips. IFX's share of the power chip market would grow from 11.8% to 17.2%, far ahead of Toshiba and Mitsubishi's 7%. The merger should cut operating costs and increase the utilisation of IFX's 300mm wafer production plants.

More recently

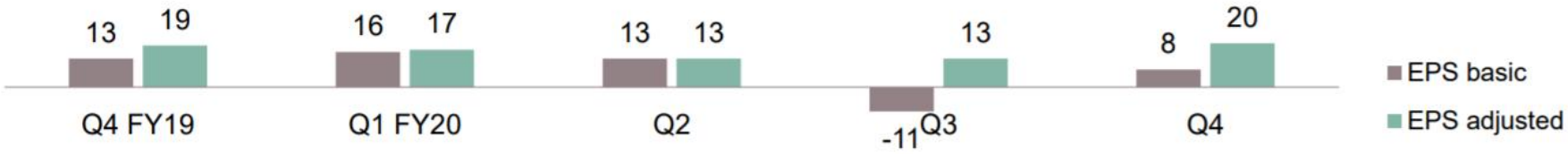
- Infineon reports strong fourth quarter. Outlook for the new fiscal year cautiously optimistic. Integration of Cypress remains on track
  - Q4 FY 2020: Revenue of €2,490 million; Segment Result €379 million;
  - Segment Result Margin 15.2 percent
  - FY 2020: Revenue of €8,567 million, up 7 percent year-on-year; Segment
  - Result €1,170 million; Segment Result Margin 13.7 percent, organic free cash flow €911 million
  - Stable projections for (not reported here for brevity)
  - Proposed dividend for FY 2020: €0.22 per share (FY 2019: €0.27); reduction due to impact of corona pandemic and ongoing risks

What happened

Earnings-per-share and total cash return

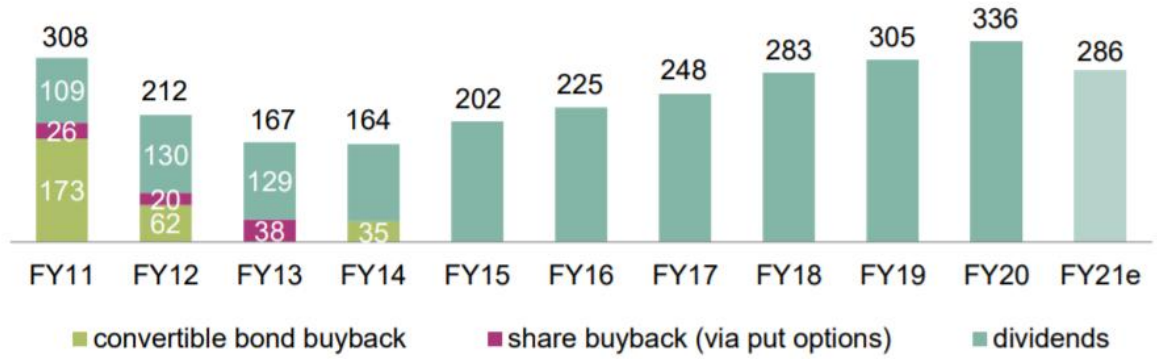
Development of earnings-per-share (EPS) from continuing operations

[EUR cent]



Total cash return to shareholders

[EUR m]



- Dividend proposal for FY20: €0.22 per share
- Proposed total dividend payout of €286m for FY20

Infineon Takeaways

- Target Leverage/Cash
  - Knowledge-based business: Highly risky/cyclical + Huge distress costs (inflexible CAPX and R&D) + Intangible assets
- Very conservative: Negative leverage

- Getting there: Payout policy
  - Means: Dividends, Buybacks, Options, Converts
  - Be clear on goals:
    - Adjust gradually : Open market
    - Exploit underpricing: Dutch auction
    - Signal: Fixed price
    - Different clienteles