Foreningen af Matematik-Økonomer

Study Tour to London 2001

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Introduction

Every year the Society of Mathematics and Economics Students at the University of Aarhus in Denmark plan an educational trip with the purpose to gain knowledge on how different corporations operate in relation to our education, with the main fields being Operational Research and Finance. Every second year we travel abroad to visit foreing companies. We have formerly visited London, Brussels, Milan, Berlin, Amsterdam and New York and this year we decided to pay London a second visit.

48 students participated in the educational trip to London from the 6th to the 12th October. Each of the participants visited between 3 and 5 of the following companies:

- Credit Suisse First Boston
- Deutsche Bank
- Danske Bank
- Bank of America
- JP Morgan
- Mindshare
- GlaxoSmithKline
- Carlsberg Tetley

This booklet contains a summary of each visit. We wish to thank the above mentioned companies for their kind coorperation and for the time they spent on our visits. We also wish to thank the following companies and foundations for their financial support:

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On behalf of the Society of Mathematics and Economics Students: Ib Johnni Andersen, Dan Bang, Mads Kjølsen Olsen, Trine Frischman Pedersen, Elisabeth Weinreich, Trine Vinther Madsen and Ditte Hviid.

Credit Suisse First Boston

On Monday the 8th of Oct. 2001 we arrived at the Credit Suisse First Boston at 2 pm. We were welcomed by Faye Woodhead and her associates. She introduced us to CSFB, which is one of the largest investment banks in the world with more than 28000 employees in 97 locations. Because of the more integrated global market, it is necessary for CSFB to focus globally. The London division staff is a multinational one and it is important that they are well treated and feel comfortable working at CSFB.

Faye told us that their primary trading area and main income resource is Fixed Income, which is one of the fastest growing financial products in the market. The Fixed Income Division is divided into following areas:

- Research
- Sales
- Trade
- Debt Capital Markets
- Asset Finance & Securitisation

From Debt Capital Markets came Katja and Viktor, who are both Swedish. Their work is to help originate, structure and place new issues onto the debt markets. To give concrete examples, Katja presented the Transco and the Marlin Case Studies, in which CSFB acted as a lead manager on the Transco's bond transaction and Marlin's share trust transaction.

From the Research department we met Janine and Derek. We got a view of their daily business and routines. Janine is in the interest rate strategy team, where their job is to forecast the shape of the Euro-Zone yield curve. She emphasized the importance of beeing up to date and keeping clients informed. Derek is in the global strategy team, where they concentrate on the overall macroeconomic picture and where information from research is used to create analytical models for security pricing.

We were also introduced to two Danes, Michael from the Sales division and Nikolaj from Trade, who came to London recently to work at CSFB. They told us about working in a foreign country and at a big company like CSFB. They also mentioned the 8 week-training programme and the long working hours, which is a must to succeed.

At the end of our visit Michael showed us the trading floor, where all the action takes place.

The visit at CSFB was well arranged, very interesting and met all our expectations. Thank you very much.

Referants: Thang Doan, Jakob Pedersen, Diane Jensen, Juanna Joensen.

Deutsche Bank

Monday the 8th of October we visited Deutsche Bank (DB), London. We started the visit off with breakfast at the Craven Room, where the presentations also were to be hold.

The first speaker was Knut Nilsson, Graduate from Copenhagen Business School, who gave an introduction to DB: DB has more than 90000 employees and is divided into two business groups: Corporate and Investment Banking (CIB) and Private Clients and Asset Management (PCAM). DB is not a traditional German bank. As an employee of DB you are given a lot of responsibility from day one, you are a part of a team and it is easy to transfer to another department within DB.

Next Knut Nilsson talked about the Nordic Equities and he mentioned the high ranking of DB especially in Scandinavia. Among the more than 150 clients in the Nordic countries he mentioned TDC and Novo Nordic.

Then Morten Andersen, HA from Aarhus, working in Equity Research, took over. He mainly concentrated on telling us about the differences between DB and other Corporate Finance companies. DB focuses a lot on human ressources compared to more agressive American companies. Their goal is to be among the top-three ranked banks within the next five years. In the opinion of Morten Andersen there are approximately 10 competitors to this position.

Next person to speak was Krista de Jager-Cooper, who told us about their Graduate Recruitment: Even though their competitors are cutting back on their staff, DB is still recruting. This is done on an online basis which works surprisingly well. The recruitment to a full time job and a summer internship works basically the same way. An internship is 10 weeks and it is a good way of getting to know the firm and the firm to know you!

The last person speaking about the firm was Rebecka Dellby. She told briefly about Corporate Finance and how DB is build upon a matrix structure. She also mentioned Carlsberg and Danisco among their Danish clients.

The visit ended with a guided tour at the trading floor. Krista de Jager-Cooper and Ivan Vatchov showed us round.

Danske Bank

Karsten Thomsen, who had arranged our visit, welcomed us when we arrived at about 10 a.m.. Karsten graduated as cand.scient.econ in 1997, and started working in Danske Bank in March 1998.

The first speaker was Martin Bracken from Financial Control. Martin has 22 years of experience in banking, and has been working for Danske Bank the past seven years. He is mainly into interest rate swap trading. He told us a little about the structure of Danske Banks London Branch.
In Denmark Danske Bank is the largest bank and dominates the market, but The London Branch is relatively small compared to other international investment banks in London. When they opened in London in 1982, they were one of over 500 investment banks in a highly competitive market, therefore the London Branch had and still has to be aggressive in contrast to the conservative image they have in Denmark.
Today the London Branch employs over 150 people among them 17 danes.

The next speaker was Rune Heinrichson who started at Danske Bank earlier this year. Rune works with Credit Derivatives (CDs), which also was the subject of his presentation.
The risk of a debitor not repaying a loan to a creditor, is called the credit risk. CDs is a way to transfer credit risk from creditors to others who are willing to take the risk.
Buyers of CDs is typically other banks, pension funds,insurance companies etc. The diversification of credit risk implies that the banks are willing to lend more money. This improves the stability of the banksector during a recession, because the higher risk of default among the debitors is diversified to other sectors.
The Credit Derivatives market is relatively new and the size is difficult to determine because many CDs are traded OTC and are not registered. Recent calculations though, implies that the market is exponentially increasing. Because the market is so new, it is not yet 100 percent efficient so it is still possible to make arbitrage profits. CDs are very difficult to price due to complicated juristic rules, and lack of historic data.

Last to speak was Chris Stangroome. He graduated from Bath University as Aero engineer in 1991. He started working as a Risk Manager at Danske Bank Market Risk in 1998. First he told us about different measures of risk and how to choose between them, which essentially is a trade-off between accuracy and speed.
Chris Stangroome is responsible for the Risk Management in London, but still has to report to the Head of Market Risk in Denmark. Every dealer in Danske Bank London is monitored by a computersystem, in which all trades are recorded. The system calculates the amount of risk in every deal and if a certain limit is excessed Chris is notified and sorts out the problem.
To help management get a quick overview of the total risk, Chris calculates VaR(Value at Risk) which is an estimate, with a given degree of confidence, of how much one can lose from ones portfolio over a given time horizon. The advantage of VaR is that it encompasses the total risk of an entity in one figure.

After three interesting presentations Danske Bank served a delicious lunch and we had the opportunity to talk to the speakers.

Bank of America

Thursday October the eleventh, we visited Bank of America. Bank of America is a consumer, commercial and investment bank, and one of the leading in most areas. Our visit was to the quantitative research department, where we were told there would be three lectures about some of the areas they cover in the department.

The first lecture was about - Constant Maturity Swap(CMS) Rates in a skewed world.

The lecturer was Paul Cloke, an Englishman who has a PhD in physics from MIT.

CMSs pay CMS coupons against a fixed rate. The coupons pay a swap rate rather than a LIBOR rate. The rates are above the normal forward rate.

The pricing of CMSs is rather difficult compared to the easy pricing of normal swaps. Normal swaps have a convex payoff structure, but the CMSs have a linear payoff structure, which makes the pricing much more difficult. The problem is that you can not set a price on the CMSs directly, so you use a technique where you replicate the payoff structure with swaptions.

Rates are usually supposed log-normal distributed, but this model considers the fact that rates are not always log-normal, and the pricing is usually more correct than in your older models. In the short time span the difference between the two models, is rather small, but with time the difference grows exponentially, which makes this model much better for long term predictions.

The second lecture was about

- Pricing Credit Derivatives Products

The lecturer was Dieter Baum, a German who has a PhD in mathematical finance from the University of Berlin.

One Credit Derivative is a Credit Default Swap. The fixed payer, buying protection from the risk, pays a running premium. The float payer, selling protection from the risk, pays a loss amount in case of a default of a reference asset. Typically all payments are in the currency of the reference asset. However there is a case where the premium and the losses are paid in a currency different from the standard currency, this product i called a Quanto Credit Default Swap. Dieter Baum was asked by a trader to set a premium for this product, and he developed a very complex model to do this. With a Quanto Credit Default you can synthetically create credit exposure of a bond in a currency, where an issuer has not issued a bond, which is the main motivation for developing a very complex pricing model for it.

The third and final lecture was about

- Pricing and hedging of Bermuda Swaptions

The lecturer was Jesper Andreasen, a Dane who has a PhD in finance from The University of Aarhus. He has formerly worked at Bear Sterns and he has been with Bank of America for about a year.

Bermuda swaptions are, hence the name, a mixture of an American and a European swaption. That means you can exercise it, but only at certain given dates, this makes it very hard to price because the price is dynamically dependent of the yield curve. The complexity of the pricing increases with the maturity. The only really satisfying way to price it, is with the LIBOR market model(LMM), because it uses a lot of factors and complex simulation. However this also makes the computing very tedious and therefore slow. This makes it impractical, because it is often necessary to compute a large amount of prices in a very small amount of time. This is the main motivation for developing the Simple One Factor Markov Model(SOFMM). It can be calibrated so that it computes nearly as accurately as the LMM and it works particularly well ”at the money”. But the main advantage of the SOFMM is that it can compute the pricing of the Bermuda Swaption in a much smaller amount of time. For example the SOFMM can compute the price, with an accuracy of one penny, of a 30-year Bermuda Swaption in 0.5 seconds, whereas the LMM uses about 1 minute. The development of this model has been in process for the last 2 years. The essentials of this model are very mathematically complex, and Jesper Andreasen spent the largest part of the lecture explaining it.

Overall we found the visit exiting and challenging: David Skovmand, Jan Midtgaard and Johan Lund

JPMorgan

Wednesday the 10 of October we visited JPMorgan Fleming, which is the Asset Management department of JPMorgan. Jeppe Gregersen (associate in Corporate Finance) gave us a short introduction to the history of the bank. At the end of the year 2000 JPMorgan and Chase Manhattan merged. This led to the corporation JPMorgan Chase Manhattan which operates in more than 50 countries with assets of $ 799 billion and a number of customers exceeding 30 million. He also spoke about internships and job-opportunities.

Afterwards Ulrik J. Walther (client portfolio manager) started his representation of JPMorgan Fleming. He pointed out that being part of a large bank has some competitive advantages:

- a high number of associates means a better or equivalently a more thorough analysis of the market.
- the resources to invest in new and more risky products are available. These investments often pay a higher return, than investments in established products.
- better and quicker access to new information.

Considering total assets under management of US $ 611 billion, Fixed Income alone counts for 43% and is therefore a key part of their business. This area was also the subject for the rest of the day. The three key drivers of return in global fixed income portfolios are: interest rates, credit products and foreign exchange. The purpose of the investment process is to create a positive profit by beating a given benchmark. The underlying strategies are based upon a decision process which (in rough terms) goes as follows:

A global committee of macroeconomic-experts is invited to discuss the situation in their respective markets worldwide. Strategists then make an investment-strategy based upon the information received from the committee. The strategy is then implemented using several quantitative models. In this context Ulrik mentioned two terms:

- top down (macroeconomical investment method): Deciding in which countries, which markets and which sectors to invest.
- bottom up (microeconomical investment method): An analysis of firms related to the above-mentioned markets. The analysis is made by different analysts with knowledge regarding different sectors.

Therefore, the top down and bottom up approaches are both considered when deciding what action to take. Given the clients preferences (more or less risk-averse), the client portfolio is then constructed on basis of the abovementioned analysis.

After a good, informative and well-structured representation, lunch was served. Ulrik and Jeppe told us about their experiences with living and working in London. We got the impression that living and working are two sides of the same coin! Finally, we wish to thank those involved in our visit, especially Jeppe and Ulrik for an interesting day.

MindShare

On Thursday the 11th of October we had the privilege to visit MindShare in London. At first we were welcomed by Jan Voetmann, a former Mathematic and Economics student from University of Aarhus, who gave a short introduction to MindShare and how he got a job in the London department of MindShare.

He then introduced Clare Yarwood, New Business and Marketing Manager, who gave a more thorough introduction to MindShare.

MindShare is the worlds largest media investment manager when compared on how much money they spend for their clients. MindShare has offices in 51 different countries in the world and more than 3400 employees, which makes it the first global media company. Some of its clients are Unilever, Ford, Nestle, Nike etc. covering a wide range of industries.

MindShare is divided into the following departments:

- The House of Media: Media planning and buying.
- Advanced Technic Group: Communication Planning Consultancy.
- BroadMind: Eventmarketing (Sponsoring etc.).
- M-digital: Internet advertising.
- MindShare Direct: One-to-one Marketing.
- MindShare Consumer Inside: Consumer Research.
- The WOW Factory: Creative Ideas.

After this introduction Jan Voetmann continued with a presentation of the 4 phases MindShare undertakes, when getting a new project, and of the Advanced Technic Group (ATG) department, which he is a part of.

The four phases are:

Phase 1: Understanding the objectives: Who is the client, brand, competitors etc..

Phase 2: Developing the Media Strategy: Establishing the target audience, Portfolio management, the media vision.

Phase 3: Implementation: Communication Channel Selection, Pre Campaign Analysis.

Phase 4: Evaluation: Post Campaign Analysis.

The ATG department has 50 consultants in 12 different countries and seek to optimize the clients return on marketing investment by providing forecasts and media market analysis. ATG makes two types of analysis, one available for MindShare and its clients consisting of eg. media inflation reports and recession analysis. The other type of analysis consist of econometric analysis eg. forecasting the demand of a product in a year.

The last person presented to us was Simeon Duckworth, Managing Partner, ATG UK. He gave a short lecture under the title “Will there be a recesssion in UK?”. He told us what indicators there are eg. the Misery Index. There are also lasting impact from uncertainty after the 11th of September:

- Financial market re-evaluation.
- Consumer spending weaker.
- Business costs higher.
- Reversal of “Peace Dividend”.

The second and last lecture he gave was “Advertising markets in a Recession”. The real advertising expenditure is more volatile than GDP. Lately there have been some cuts in advertising. What is causing the ad market recession? There are three hypothesis:

- Slump is temporary.
- We’re heading for a recession.
- There has been a “structural change”.

We would like to thank everyone involved for an interesting visit.

GlaxoSmithKline

On the 9^{th} of october 2001 we went to Maidenhead to visit the GlaxoSmithKline factory. We were welcommed by Rohit Patel, logistics officer, who showed us to the conference room. He started the presentation with an introduction to the factory, and then went into more specefic details about how to make toothpaste (Aquafresh).

The GlaxoSmithKline Company have had productionplants in many parts of the world such as India, South Africa and Denmark, but have decided to gather all of their production at their facilities in Maidenhead, which has been highly automated over the last years. This improved efficiency has replaced many jobs, but the People Development stategy of the GlaxoSmithKline have focused on keeping the human resources within the firm, under the motto: ”money shared is money halved, but knowledge shared is knowledge doubled”.

The plant in Maidenhead produces 4.5 million packages daily which is about 100 tons. The plant is operated in 12 hours shifts making a 24 hours production day. All the products are shipped out within 24 hours after production. The production is rescheduled on a day-to-day basis. They don't try to optimize there order-policy, because the rawmaterials are kept in large tanks, and they only have space for one tank for each rawmaterial. Each year GSK invite tenders to deliver rawmaterials (sorbitol etc.) to the company.

Next on the agenda was a guided tour around the plant, where first-line manager Karen Ward and Rohit Patel showed us the filling&packing and manufacturing areas. Karen Ward told us that much of the plant had been automized, but there is still work to do before completion is achieved. Roy Ewans gave us a detailed description of the computerized system of mixing and blending. The system is very complex and it needs supervision 24 hours a day.

After an exciting tour around the factory, the visit ended with lunch in the conference room. Before leaving each visitor received a bag of many different toothpastes. We would like to thank Rohit Patel, Karen Ward and the GSK company for an exciting and educational visit.

Carlsberg

Wednesday october 10 we visited Carlsberg/Tetley in Northampton. First we went on a guided tour around the brewery. Among the things we were told was that on this perticular site there has existed a brewery for the past 150 years. In 1974 it became a Carlsberg Brewery and then in 1996 became Carlsberg/Tetley. The guided tour went to the silos containing malt and stout, the brewhouse, the yeasttanks, the powersupply (Carlsberg/Tetley are self-sufficient in this area), the testing area where they test the taste, colour and smell of their products. Next we saw the canning department, where they could fill 24 cans per second, then we went to where the bottles were cleaned and filled. The last place we were shown were the kegging plant.

Hereafter John Nigthingale, the headbrewer, gave us a presentation of Carlsberg/Tetley. Carlsberg/Tetley is a part of Carlsberg Breweries which were formed february 14th 2001. Carlsberg Breweries are at present in 43 countries. 60% of Carlsberg Breweries is owned by Carlsberg A/S and the last 40% is owned by Orkla. The annual production is 60 million hectolitre and the annual turnover is 800 million pounds. In the UK Carlsberg Breweries has two breweries, one in Leeds and the one in Northampton, where they brew all Carlsberg Lager used in UK.

The history of Carlsberg in the UK:

- *1847:* First Carlsberg product brewed in Copenhagen
- *1868:* Carlsberg imported to Scotland
- *1960:* Carlsberg Lager had 1% of the UK market
- *1970:* Carlsberg Lager had 7% of the UK market
- *1970:* Joint venture with Watneys by which they increased the capacity to 1 million hectolitres
- *1976:* Carlsberg aquired whole equity
- *1992:* Joint forces with Allied
- *1997:* Allied has been bought by Bass, but Carlsberg is denied by the British government the right to join forces with Bass
- *2001:* Carlsberg join forces with Orkla and becomes Carlsberg Breweries

Carlsberg/Tetley products in UK: Regular Lager, Special Brew, Export. 70% are sold on-trade and 30% are sold off-trade.

Finally Dishi Phillips took us to the staff club where we got a taste of Carlsberg/Tetley.

We would like to thank

Carlsbergs Mindelegat for
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Oticon Fonden

Accenture

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