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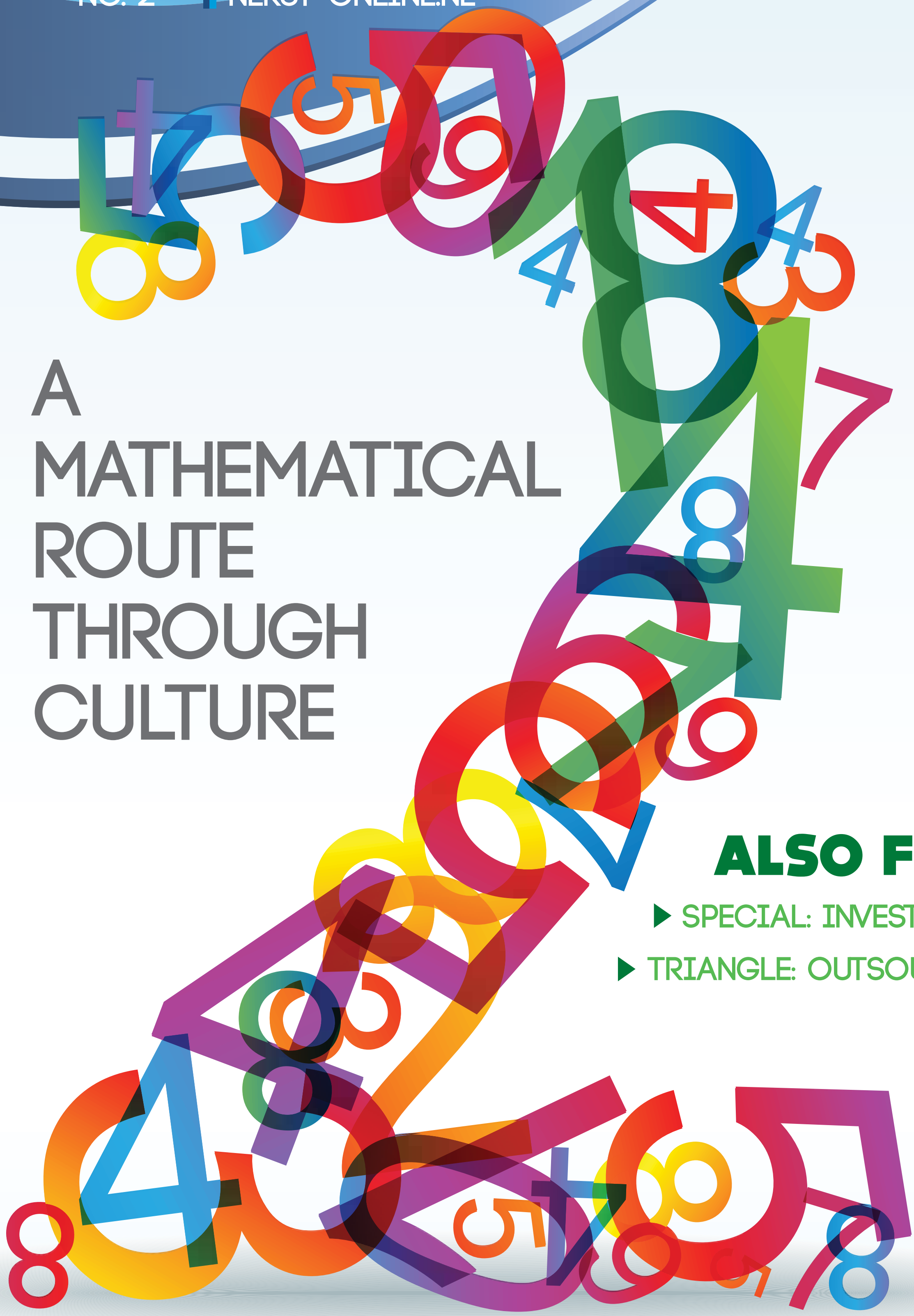

A MATHEMATICAL ROUTE THROUGH CULTURE

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Preface

Looking Forward

At the moment you are reading this magazine it is probably already 2014. This does not only mark the start of a new year, but also means the academic year is nearly half way. Thus this is not only a time of looking back but also of looking forward. Concerning Nekst, 2013 will be remembered for the interview with Nassim Taleb and the change in lay-out. 2014 will hopefully also bring new interesting editions of Nekst, including a special Lustrum-themed edition in the spring.

Let us not forget about this edition while dreaming away both forwards and backwards in time. In this edition we have shed our light onto both our study and the university department associated with it. This resulted in two articles, one concerning the recent and upcoming changes within the EOR programs and one concerning the research being done within several fields of econometrics and operations research by members of the EOR department. I would like to thank the EOR department for their cooperation and helpfulness in the production of these articles. Besides that we once again investigate the relationship mathematics has to our society. This time we have chosen to try and find mathematics in arts, so check that out if you are interested!

This already brings us to the end of my quarterly ramble. I would like you to sit back, relax and enjoy the read!

Ernst Roos
Editor-in-chief

COLOPHON

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The Teacher

In this edition of The Teacher we interview Jan Sprenger, who not only has a PhD in philosophy, but happens to have a Diploma in mathematics as well.

IBT: Singapore

Last October, 24 of our fellow students visited Singapore to discover its culture and business environment. In this report you can find both beautiful photos and wonderful stories.

Exchange Report 34

Anniek tells us everything about her experiences in the cold but cozy Canada

ADVERTISEMENTS

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Study Developments

In this special we paid prof. dr. ir. Van Dam a visit to learn more about the changes in the EOR study program.

TOWERS
WATSON

Dear Members,

As the New Year dawns, the temperature is decreasing, the snow is falling and the exams are coming, let me take this as a moment to reflect on 2013 and to look forward to what the year 2014 will bring us. I hope that 2014 will be filled with the promises of another good year for you and our association!

The year 2013 will be remembered as the year during which a new pope was installed, the Netherlands received a new king and the government of the United States temporarily shut down. For our association, highlights of the year 2013 were amongst others the organization of another successful edition of the National Econometricians' Day, the new lay-out of Nekst and of course the merger of our association with the other associations carrying the prefix Asset, although this might be less evident for our members.

Upcoming year will be quite a sportive year for the world. In February, the Winter Olympics will be held in Sochi, Russia. For those of you more sensitive to the cold, the FIFA World Cup will be organized in Brazil. And, for the monarchists amongst us, the very first King Day will be held.

The year 2014 promises to become another great year for Asset | Econometrics as well. As you might know, the Lustrum week, during which we will celebrate the 35th birthday of our association, will take place from March 18 until March 22. Thus, you still have some time to learn the Lustrum song by heart and to find a date for the gala. Of course, the organization of the Lustrum week does certainly not swallow up the organization of other events. During the second semester of this academic year amongst others a symposium about Big Data will be organized. Moreover, several weekends will be organized for our members. In the last weekend of January, the Lustrum Trip towards Hamburg will take place. In April, the sixth KOALA weekend will be organized for all Former Active Members of our association and in the same month the legendary Active Members' Weekend will take place. Furthermore, we will organize a Parents' Evening during which our active members can show their parents what they are doing at Asset | Econometrics. And do not let me forget to mention the regular activities, such as the infamous COdE beercantus, the Après Ski Drink and the Secret Activity. They are must attends for all econometricians and are guaranteed to become a success with your attendance!

Please do not hesitate if the above sound like activities you would like to organize yourself. In January, new committees will start of which you can become part. Would you like to make the new Book of Faces or perhaps organize the Introduction Activity for our new members in 2014? Or did this magazine perhaps appeal to you in such a way that you want to contribute to it yourself? Or maybe you rather prefer a somewhat more formal committee by organizing the new edition of the Finance Expedition or the Business Diner? Whatever the case may be, let us know and become active!

I hope that you will all enjoy the holidays and I wish you all the luck in the world with your upcoming exams! May you all come to meet a great year and we hope to see you all at our activities this year.

On behalf of the board,

Suzanne Vissers
Chairman Asset | Econometrics 2013-2014

CBS: Top Employer

Statistics Netherlands (or in Dutch Centraal Bureau voor de Statistiek - CBS) has over 2,000 employees, who either work at their office in The Hague or Heerlen. For this business interview, Floris and I had an appointment with Jacco Daalmans, an econometrician who works as a methodologist at both locations. Therefore, we traveled south to Heerlen to get some more information and insights with respect to working at this well-known institution.

Text by: Ennia Suijkerbuijk

After quite a long journey, we arrived at the imposing brand new building of Statistics Netherlands, where we were welcomed by Jacco. As we sat down in two big trendy chairs, we took a good look around to take in the impressive design of the building. The architect clearly wanted to give the place a transparent structure, as not only the ceiling is made of glass, but also most of the office walls are completely see-through. In some ways this corresponds to the concept of Statistics Netherlands: an independent government body that publishes all its findings and statistics free of charge, for use by government, science and the business world.

Employees at Statistics Netherlands

Like 52 of his colleagues, Jacco works at Statistics Netherlands as a methodologist. Methodology is a very broad concept and can be described as 'the analysis of the principles of methods, rules and postulates employed by a discipline'. Jacco's task is to give internal advice about problems and methods, doing his own research. An example of a research project is data editing: finding and eliminating inaccuracies in datasets. Inaccuracies can occur when people provide incorrect information about themselves, either intentionally or accidentally. Jacco illustrates this with the case of someone who says he/she is male and pregnant. It is up to the methodologists to not only identify these false data, but also to propose existing methods or develop new ones to eliminate them automatically. As you can imagine, Jacco spends quite some time researching and developing programs, but he also has to write reports, attend meetings, and occasionally go on department excursions.

Jacco Daalmans
Methodologist at Statistics Netherlands (CBS)

What is interesting about Statistics Netherlands is the wide variety in employee backgrounds. In addition to econometricians and mathematicians, there are also economists, physicists, chemists, biologists, psychologists, political scientists, and doctors; there is even someone who studied to be a nature-dietician. When asked whether he enjoys this odd mixture of subject areas, Jacco answers in the affirmative.

Although people with all sorts of backgrounds are welcome at Statistics Netherlands, they do need to have certain specific qualities. For instance, you need to be able to work independently and have a quick grasp of new methods and theorems. Using your own initiative is also very much appreciated.

The Path to Statistics Netherlands

While we were getting to know more about Jacco Daalmans, we found out that he in fact also studied Econometrics & Operations Research at Tilburg University, from 1995 to 2000. Studying in Tilburg may seem a peculiar choice, given the fact that he was born and raised in Hengelo, but he decided to make a fresh start for his university choice. Jacco proclaims that he was not a natural, and actually had to work very hard to complete his studies. This did not change until he went to Vienna on an exchange, where he started studying less and spending more time on extracurricular activities. As at that time it was still compulsory for EOR students to do an internship at a company, Jacco applied to all sorts of companies and organizations. Of the replies he received, the one from Statistics Netherlands appealed to him the most, and therefore he spent the next six months as an intern at their office in The Hague. This turned out to be a pleasant experience for both parties and so, after finishing his studies in Tilburg, Jacco asked whether he could continue working there. Jacco recommends making use of the opportunity to do an internship. It is the best way to get to know a company or organization. It will also work in your favor in applications for a regular job if the company already knows you. Although Jacco is only 36 years old, he has already been working for Statistics Netherlands for the last 13 years. Until recently, he worked at the office in The Hague, but now he sometimes also works in Heerlen. It is not usual for employees to alternate between the offices, as the traveling distance is substantial, but Jacco's new partner lives in Maastricht and so he can combine working in Heerlen with staying in Maastricht for the weekend.

Top Employer 2013

Besides having the possibility of working in two different cities, employees at Statistics Netherlands have other types of freedom as well. For instance, they may work from home, and they have flexible working hours. Whereas only ten years ago, staff still had to clock in between specific times, now they have complete freedom in deciding when to work. Of course, deadlines still have to be met and staff are required to work for a certain number of hours per week, but it does make working for Statistics Netherlands more enjoyable. Although Jacco does not have any experience of working for other employers, he is very satisfied with his work here at Statistics Netherlands. "One of the big pluses of working at Statistics Netherlands", Jacco says, "is that the work is more focused on content here. We are, of course, a government institution, so not really commercially minded, which means we have more time to concentrate on quality, instead of on quantity." Apparently, Jacco is not the only one with this opinion, as Statistics Netherlands has been certified as a Top Employer 2013. This means that an independent survey has shown that the organization not only cherishes talent, offers excellent working conditions and is developing at a number of levels within the organization, but also that in the Human Resources area, it is a leader that continues to evolve and optimize its employment policy. This is certainly true for Statistics Netherlands, as the career development opportunities within the organization are very interesting, both in terms of management and content orientation. For instance, it is possible to work your way from methodologist to team manager, head of department, and subsequently perhaps even to director-general. Jacco points out that staff are encouraged to do training and courses, ranging from language courses to presentation skills, but also some courses of a statistical-technical and survey-technical nature; for instance, national accounts, or survey and sampling techniques. In addition it is also possible to arrange or participate inexternal career-related activities. Another possibility is to combine working at Statistics Netherlands with PhD research.

In spite of the many different career opportunities, Jacco does not have big plans for his job in the future, as he is already very pleased with his work. He especially enjoys advising colleagues, which means he has contacts with people from many different departments, and also that he is able to do his own research. He feels that two very important things he has learned so far are to be more extravert, and to find the right way to explain his findings: "Sometimes it is better to explain what you have done in a simpler and less sophisticated way, so that your contact person fully understands it."

After our interview and before we started our journey home, Jacco gave us a short tour of the building. Perhaps some of you will meet him at the Landelijke Econometristendag (LED), as he is occasionally invited to present cases there.

We would very much like to thank Statistics Netherlands, and in particular Jacco Daalmans, for the time and effort he took for our interview. We hope he will continue to be satisfied with his work there, and we wish him all the best for the future. •

Exploring Research in Detail

In this article we will highlight three of the best researchers the department of Econometrics and Operations Research has to offer. First of all, we will discuss the research of Arthur van Soest, which mainly focuses on econometrics in the traditional sense of the word. Secondly, we discuss the research of Hans Schumacher, primarily focused on financial mathematics and pension systems. Last, but certainly not least, Dick den Hertog's research will be the topic. His research concerns both theory and applications of operations research.

Text by: Ernst Roos

Arthur van Soest
Full professor

Arthur van Soest is one of the top researchers in the department in the field of econometrics. Examples of articles published are 'Measuring inequity aversion in a heterogeneous population using experimental decisions and subjective probabilities' in Econometrica and 'Heterogeneity in risky choice behavior in a broad population' in the AER. In this article we will mainly focus on a recent study on the sensitivity of the age of retirement with respect to financial incentives. However, we will first focus on his research in general.

Arthur usually has a many projects going on, of which he works on three to four on a monthly basis. These projects tend to be a collaboration, either with a PhD student or with another researcher somewhere in the Netherlands, or even abroad. Nowadays, all of his projects involve real data and have some practical application. In the past, however, he was also involved in some theoretical and methodological research. The beauty of research, in his opinion, is that you are completely free in choosing what research you want to do. Another pro is that occasionally, some unexpected results appear, with which you may have to deal. Arthur describes research being similar to an assignment in courses in Econometrics. There is one big difference though, since in actual research, all the sub questions are not already given, which means you have nothing more than at most a research question and a data set.

Recently, Arthur was involved in a research project together with Hana Vonkova. This research project investigated whether people would be willing to retire at a higher age, if this would mean higher pension benefits after retiring. There are several stages in a project like this. First of all, one must think what kind of model would describe the relationship you are after best. Next, one must gather the data needed to estimate this model. This sounds easier than it is, however, since one must also consider the way in which data is gathered. In this project, for instance, people were asked to rate four options with a number on a scale from 1 to 10. Afterwards, people had to choose between two options twice. It is important to consider the way these questions are asked though, since this might influence the outcome.

As soon as data is gathered, this data must be used to estimate the parameters in the model. Last but not least, the estimated model must be interpreted. This can be done in many ways though. One could directly interpret the estimated parameters, for instance, or one could interpret the predictions the model makes. This research gives some interesting results and interpretations. For example, about 41% of the population is estimated to be willing to retire at a higher age than 65, as long as there is a financial compensation, i.e. higher pension benefits after retirement.

Another interesting result is that if pensions in general are cut evenly, independent of the age of which you would retire, people will in general work longer to make up for this loss. This effect is also called the income effect in this study. Besides this, part-time retiring is also studied. The results of this are, however, too elaborate to summarize here. The main conclusion of the study is that people are, in general, willing to work longer when there is a financial compensation. This does not mean that this is a feasible solution though, since employers also need to agree with arrangements like this.

Studies like this could serve as extra arguments in political debates, but that is not the main goal of Arthur. He is primarily interested in investigating relationships within society and generally does not perform research commissioned by the government or private companies. ○

Hans Schumacher
Full professor

Pensions are one of the hot topics in the news at the moment and have been for quite some time now. It is therefore not surprising that a lot of research is being done in this area. One of the people conducting research in the field of pensions is Hans Schumacher. In collaboration with Bas Werker, Jaroslav Pazdera, and recently also Hailong Bao, he is performing research on the topics of financial fairness and the holistic balance sheet. Pension systems have a long history and are constructed in different ways all over the world. Currently the main concern (especially in the Netherlands) is to find a way to construct such a system, so that it can be considered to be fair.

Fair, however, is a word which can be interpreted in many different ways. This research will approach the problem from a strictly financial perspective, since for pension funds, in principle, this is all that matters. This means that the type of fairness considered is financial fairness. The concept of financial fairness means that the financial value of the payments one has to make in the future should equal the financial value of the benefits one will receive. This does seem like it is a reasonable definition for fairness and raises the question why this concept is not used in practice everywhere. The answer is quite simple: it is very complex to calculate these financial values.

The reason why this is so difficult, is that a pension contract, the agreement between a pension fund and its members, contains many involved clauses and depends on several option-like statements and conditions. For instance, a pension fund may stop indexation of pension benefits when their funding level ends up below certain bounds. This funding ratio will depend on profit made with assets, but also on interest rates, etcetera. This example already illustrates that the financial value of such a contract is not easy to determine.

In this research, however, there has already been made some significant progress in this area. For a one-period model, with a preset investment strategy, they have proven that the concept of financial fairness yields a unique Pareto-optimal solution. Besides that, they have developed an algorithm to find this strategy both with and without a preset investment strategy. At the moment, they are working on an algorithm to find a Pareto-optimal solution within the concept of financial fairness in a multi-period model with several generations. At first, they found a way to calculate an analytical solution. This method, however, would already take excessive computation time, for instances with three periods and four generations. This made them consider an algorithm of approximation and so now they can obtain a close to optimal solution for the same instances within minutes.

What makes their research unique compared to other research in this field, is that they do not only focus on the theoretical background, but that they have also developed an algorithm for finding the solution. The goal is for this algorithm to actually be used in practice by pension funds and asset managers to evaluate pension contracts.

The research described above is just one of the many project Hans Schumacher is currently working on. He is usually involved in five to ten projects at a time. Of course, some of these projects are more of a main focus than others, but the numbers illustrate the diversity of work when being a researcher! ∘

Dick den Hertog
Full professor

EOR students will probably have heard of Dick den Hertog and his famous applications of operations research in practice, especially the well-known dike heightening problem. This is not all that Dick does, however. The first thing that attracts your attention in his office, is a large map of the world hanging on the wall. This might cause one to wonder whether traveling is an important part of his job. The answer is that Dick travels to speak at a couple of conferences every year, which usually last for a couple of days and mostly take place in the United States or Europe. He tries to minimize the amount of travel he does though, since he also has a big family at home.

Besides these conferences, he gives quite a few presentations for companies as well. In these presentations he explains the latest developments in operations research to the firms and also explains how they could apply them in practice. For companies, this is important as numerous papers and articles on operations research are published every year. They rely on people like Dick to filter from those what is important for them to know. What he likes about these presentations is keeping in touch with the practical application of operations research. In this way he knows what kind of theoretical developments would benefit the practical applications the most and he can try to solve these problems in his theoretical research. Besides that, discussing your own and especially other people's research is a great way to obtain inspiration.

Dick tries to distribute his time evenly between two things. First of all, he is still involved in a few top notch practical projects, which may or may not be a collaboration with a PhD student. One of the projects he is currently involved in is optimizing the radiation treatment plan for tumors. In this project they try to optimize the distribution of several radiation sources together with the amount of radiation to destroy tumors as effectively as possible while trying to spare healthy organs as much as possible. The uniqueness of this project, which is mainly carried out by his PhD student Marleen Balvert in cooperation with MAASTRO clinic, lies in the fact that they are experimenting on mice, so they can actually measure the effectiveness of a treatment.

The second thing Dick spends his time on is theoretical research in the field of robust optimization, together with three PhD students: Ihsan Yanikoglu, Jianzhe Zhen, and Krzysztof Postek, and several other colleagues. This is a relatively new field in operations research, illustrated by the fact that there is only one book on it, written by the three 'founding fathers' of robust optimization. This book, however, is very technical and difficult and therefore it is not often used for educational purposes. To solve this problem, Dick is currently working on a book together with Ruud Brekelmans and Aharon Ben-Tal, who is one of the three 'founding fathers' of robust optimization. This book will be more accessible, with chapters both focusing on master students and PhD students. Dick himself has applied robust optimization in several of his projects in some way as well.

Dick also mentions that operations research is, and probably will be for quite some time, booming business. He mentions two causes for this. First of all, firms are struggling to compete in traditional ways, such as quality of products and services. They can, however, still gain a lot by optimizing processes within the firm, thereby cutting back costs and possibly prices as well. The second reason is that the amount of data which is available is growing at an unbelievable high rate. While several years ago, obtaining the needed data was still quite a hard task, nowadays firms have data on almost everything that goes on within them. There are predictions that in 2015, firms will need around 4.4 million people specialized in operations research. There will, however, be only about 1.5 million people available. He suggests to get aboard the operations research train while you still can! •

Joris Blonk
AGE: 21
Began studies in 2009

Exploring the Business Side of Life!

For somebody like me, who has absolutely no idea on what he wants to do for a living but who does know that he likes finance, the Finance Expedition is the perfect event! Just before the exam period starts, these three days have shed a light upon what I am actually studying for: my future career possibilities.

This year's Finance Expedition provided us with the possibility to visit five different financial companies: Flow Traders, Kempen & Co, Zanders, NIBC and APG. After subscribing early in October, it was up to the companies to select the 24 students they wanted to meet and for us to wait in suspense on whether we would be selected to participate. At the end of the month, we received the confirmation that we were selected!

During the information session on November 11 (yes, this was unfortunately planned the same day as the opening of the carnival season), we gathered in Café Karel to discuss the detailed information of the Expedition and to play a stock trading game. During the game it was easy to see that everybody in the group has an interest in finance and was willing to participate fanatically in the case of the evening. After some chats, we know who was in the group and we were ready to go to Amsterdam.

On Tuesday evening, November 19, we set off to Amsterdam. Upon arriving in the four star hotel, the organizing committee invited the participants in the Sky Lounge for a drink. This lounge bar on the 11th floor was a good indicator of the prestige of the event. The next morning after a breakfast which literally included everything you wished for, we set off to visit Flow Traders. After a somewhat hectic trading challenge which represents the work they do, we went to the Zuidas by public transport, where we visited Kempen & Co. With a case on mergers and acquisitions, as an econometrician, I was confronted with something completely new: cringe worthy back-of-the-envelope calculations but also the importance of negotiating around your proposed solution. During the rest of the visit we saw that this was only a fraction of the company's activities.

After having a rather relaxed day before, our wake-up call was set at 5:45 hours in the morning on Thursday to visit Zanders in Bussum. What I think is very interesting of this firm, is its specialism in Treasury Management and consultancy. The first category is not addressed as much within econometrics, however it seems to me as an interesting specialization. After that we rushed over to The Hague to visit NIBC where we were welcomed with a new case, where we had to determine the capital that they would be willing to invest in oil platforms. After returning to our hotel late in the evening, we all agreed that we had had an exhausting day. However, some of us won a bottle of vodka at one of the cases: work hard, play hard…?

On the final day, the portfolio manager of many big pension funds APG was visited. As this company is especially interesting for econometricians, I was looking forward to this visit and was not disappointed. We had to speculate on our portfolio on the basis of fake future news facts, although real work at APG will include more quantitative methods. After three informative days, we had to return to Tilburg.

Because the event was a cooperation between Asset | Accounting & Finance and Asset | Econometrics, the group had a nice mixture of students with backgrounds in business and econometrics. During some cases, it became clear to me that the power of mathematics is nothing if you do not know anything on how the market works. The mix of students is what makes this event so powerful you are able to inspire each other. As I now have a better insight in what to do with finance, I would say to everyone: subscribe next year! •

Cyclical Patterns and Running Risks

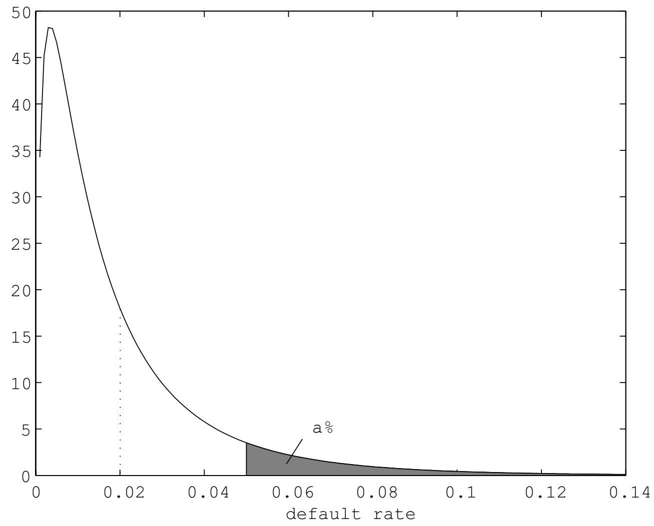
In order to absorb losses from, for example, defaulting loans, banks are required to hold capital reserves. In the Netherlands, requirements for the level of capital reserves are based on the capital requirements as described in the Basel capital accords. In order to determine capital requirements banks provide input parameters. However, different philosophies underlying the determination of those input parameters might lead to different capital requirements.

In 1970, the Basel Committee on Banking Supervision (BCBS) was established. This committee is responsible for guidelines on the supervision of banks worldwide. Since its establishment, BCBS has generated several international regulatory standards, referred to as Basel I, Basel II and Basel III. In the latest accords, BCBS aimed to make capital requirements more risk sensitive. Hence, banks are required to determine input parameters that are representative for the amount of risk taken. These parameters are the exposure at default (EAD), loss given default (LGD) and probability of default (PD). Capital requirements are determined on the basis of these parameters. When looking at a portfolio of (retail) loans, the input parameters are to be determined for a bucket of loans with similar characteristics. Hence, capital requirements are calculated per bucket. Total capital requirements are obtained by summing the capital requirements per bucket.

The Vasicek Model

Underlying the capital requirement formula described in the Basel capital accords is the Vasicek model. By the Vasicek model, the probability that a loan defaults depends on an idiosyncratic factor as well as a systematic factor. For example, the idiosyncratic factor could be influenced by illness or a divorce, while the systematic factor could be influenced by houseprices or wages. Hence, the systematic factor influences the probability of default of the entire portfolio, while the idiosyncratic factor only influences the probability of default of one obligor. Because the default event of a loan depends on a systematic factor, the number of defaults in a portfolio does not necessarily converge to the expected default fraction, when the number of loans in the portfolio goes to infinity. Instead, a default fraction distribution can be determined, referred to as the Vasicek distribution. We arrive at the capital requirement formula described in the Basel capital accords by determining the 99.9% Value-at-Risk of the Vasicek distribution.

The Vasicek model is a single period model. Hence, it is unable to properly model default events over time. However, the research



question covered in my thesis requires a methodology that is able to model default events over time. Therefore I developed a dynamic version of the Vasicek model. There are two important properties that should be satisfied by a methodology modeling default events over time. First, as explained in the Vasicek model, default events are subject to a systematic risk factor. Second, the probability that a loan defaults depends on the state of the economy (see e.g. Crook and Bellotti, 2010). To incorporate these properties in a model, I extended the Vasicek model. Thus, within the framework of the Vasicek model, I assumed that the probability that a loan defaults depends on the state of the economy. In particular, if the economy is in a downturn, the probability of default is higher than during times with normal economic conditions. On the other hand, if the economy is in a boom, the probability of default is lower than during times with normal economic conditions. In all three possible scenarios, the probability of default depends on an idiosyncratic factor as well as a systematic factor. The resulting default fraction distribution is similar to the Vasicek distribution, but it has a fatter tail. Hence, the 99.9% Value-at-Risk is higher.

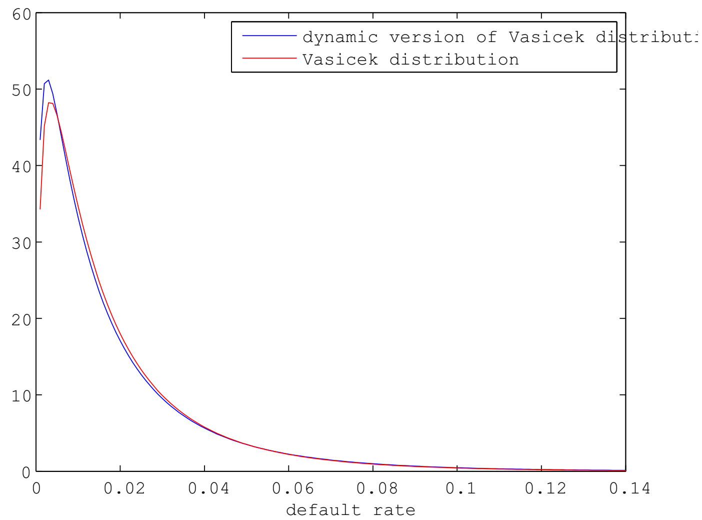
Rating Philosophy

Although extensive regulations regarding capital requirements are set in place, there are no explicit prescriptions regarding the philosophy under which the input parameters should be determined. In my thesis, I investigated the implications of different philosophies regarding the determination of the probability of default. We can distinguish two different philosophies: through-the-cycle and point-in-time. The through-the-cycle philosophy is defined as the philosophy where the probability of default is determined over the entire economic cycle. Hence, the probability of default does not depend on the state of the economy. On the other hand, under the point-in-time philosophy the probability of default does depend on the state of the economy. Note that, in the model described above, we made use of three different probabilities of default for three different states of the economy. Hence, the probability of default under the through-the-cycle philosophy equals the expected probability of default, which we set equal to the probability of default under normal economic conditions. Furthermore, the probability of default under the point-in-time philosophy equals the probability of default associated to the current state of the economy.

Also note that, as the probability of default under the through-the-cycle philosophy does not depend on the state of the economy, there is no correlation between the economy and capital requirements. However, as the probability of default under the point-in-time philosophy is higher in an economic downturn and lower in a boom, capital requirements under the point-in-time philosophy are negatively correlated to the economy. This is an important observation, as it leads to procyclicality in the capital requirements. Capital requirements are said to be procyclical if they amplify economic conditions. This can be seen as follows. When economic conditions deteriorate, risk goes up and thus capital requirements go up. In order to satisfy capital requirements, banks will have to attract money. However, since it is expensive to attract money in periods of economic distress, banks may reduce lending. This causes household spending to drop, thereby amplifying economic distress. A similar reasoning can be applied for economic booms. The reduction of procyclicality was one of the objectives in Basel III, underpinning the fact that procyclicality is believed to have important implications for the economic climate. Hence, procyclicality seems to be an important disadvantage of the point-in-time philosophy.

Transitions

However, in our analysis thus far, we ignored the transitions of loans between different buckets within the →



portfolio. As mentioned before, capital requirements are calculated for different buckets and total capital requirements are obtained by summing the capital requirements per bucket. Hence, even though the probability of default per bucket under the through-the-cycle philosophy stays the same over time, total capital requirements might change. This change is due to a different distribution of loans over the buckets. In particular, under the through-the-cycle philosophy an economic downturn, and hence an increase in risk, is reflected by a shift in the distribution of loans towards the worse buckets. In contrast, under the point-in-time philosophy, the distribution of loans does not necessarily has to change due to an economic downturn. Indeed, an increase in risk is already reflected by an increase in the probability of default of all buckets. Hence, we define two different versions of the point-in-time philosophy: the version where the distribution of loans depends on the state of the economy and the version where the distribution of loans does not depend on the state of the economy.

Transitions of loans between different buckets can be modeled by means of a transition matrix. A transition matrix describes the probability that a loan transitions from one bucket to another. However, in a similar fashion as under the Vasicek model, we would like the transitions of loans between different buckets to depend on a systematic risk factor. Furthermore, in order to make the distribution of loans dependent on the state of the economy, we need that transitions between buckets depend on the state of the economy. This idea is supported by empirical observations, as e.g. Nickell et al. (2000) find that transition matrices depend on the state of the economy. Hence, I extended the dynamic version of the Vasicek model to model transitions between buckets.

Results

To compare the different philosophies underlying the determination of the probability of default, I calculated total capital requirements under all three philosophies (through-the-cycle, point-in-time where the distribution of loans depends on the state of the economy and point-in-time where the distribution of loans does not depend on the state of the economy). Note that the following results are sensitive to the choice of the parameters in the model.

Total capital requirements under the through-the-cycle philosophy are, on average, higher than total capital requirements under either version of the point-in-time philosophy. However, total capital requirements under the point-in-time philosophy fluctuate more over time. Although high capital requirements are more likely to give a good protection against future losses, they might lead to a low return on capital. Indeed, capital reserves cannot be used to invest in risky opportunities generating a high return.

Furthermore, total capital requirements under both versions of the point-in-time philosophy are negatively correlated to the economy. This correlation comes from the fact that the probability of default depends on the state of the economy. In contrast, total capital requirements under the through-the-cycle philosophy show a small positive correlation to the economy. This correlation comes from the fact that transitions between buckets depend on the state of the economy. Note that, in theory, we would expect a negative correlation due to a shift in the distribution of loans. Hence, our findings are different from what we expected. A negative correlation between total capital requirements and the economy leads to procyclicality, which is an undesirable property. Hence, in this aspect, we find that the through-the-cycle philosophy has an advantage over the point-in-time philosophy. •

‘Hence, our findings are different from what we expected’

References

Bellotti, T. and Crook, J. (2010). "Time varying and dynamic models for default risk in consumer loans", *Journal of the Royal Statistical Society: Series A (Statistics in Society).*

Nickell, P. , Perraudin, W. and Varotto, S. (2000). "Stability of rating transitions", *Journal of Banking & Finance.*

Vasicek, O. (1987). "Probability of loss on loan portfolio", KMV Corporation.

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How Did Vega Become a Greek?

The word "fiets" ranks high among the words in Dutch that are most likely to be known by students from abroad. (It means "bicycle", just to be sure.) An interesting feature of this word is that it is not known how it actually became part of the Dutch language. It must have been invented around 1870, when the bicycle quickly rose to its current status as a widely used means of transportation. Nevertheless, it seems that nobody knows for sure who introduced the word "fiets", and there are only speculations about its etymology.

Even in the highly documented world of science, there are examples of terms that are of unknown origin. Take the word "vega", which is a standard notion in mathematical finance. The term is used in the context of financial contracts such as options, which are based upon an underlying quantity such as a stock index or an exchange rate. In mathematical terms, vega is defined as the partial derivative of the option value with respect to the model parameter that describes the changeability of the index. The word can definitely not be older than forty years, since it must have followed after the publication of the Black-Scholes option pricing formula in 1973. Still, there is no record of who used it first.

The terminology of mathematical finance is in fact quite a hodgepodge, being derived from several different sources. Partly it originates from the somewhat elevated parlance of mathematical economics, where people like to speak for instance of the elasticity of intertemporal substitution, sometimes abbreviated EIS to make it more snappy. Another part comes from the juicy lingo of the trading floor; would you like a plain vanilla option, or would you prefer a rainbow lookback? With little respect for mathematical tradition, the term "derivative" is used in finance for a contract that is derived from an underlying quantity, such as a stock price or an exchange rate. However, derivatives in the mathematical sense are used as well, including partial derivatives of option prices with respect to various parameters. These partial derivatives are referred to in the field as "Greeks", because the most important among them are denoted by Greek letters. For instance, "delta" is the name that is used for the sensitivity of the option value with respect to the present level of the underlying.

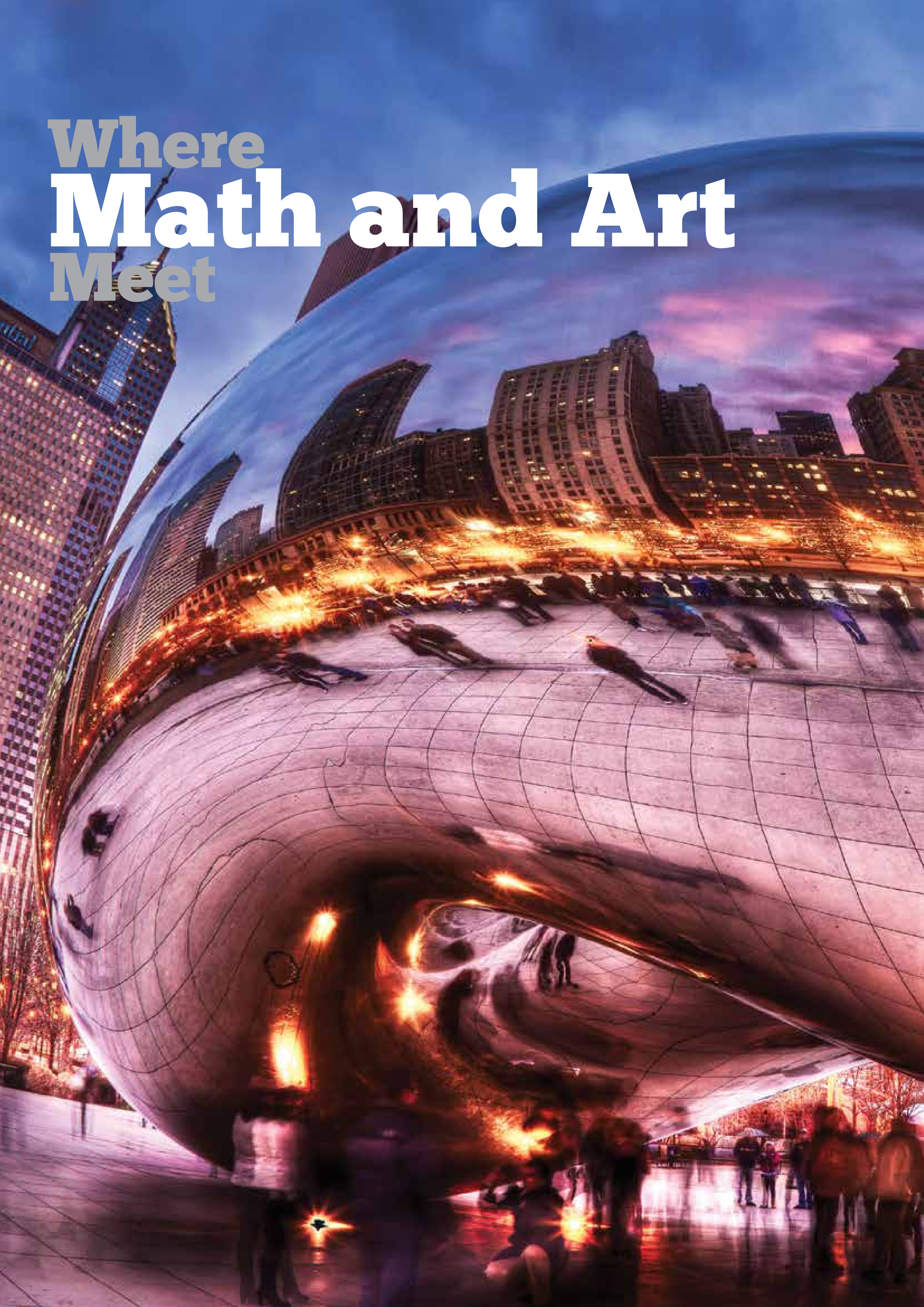
Delta is a bona fide member of the Greek alphabet, and so are gamma (used for the second derivative of the option price with respect to the current level of the underlying) and theta (the partial derivative with respect to the time parameter). Vega is not a Greek letter, however. The story about its origin that I find most believable is the following. Soon after the publication of the Black-Scholes formula, smart entrepreneurs grabbed the opportunity to produce and sell computational software, first for the function value produced by the formula itself, but soon also for its derivatives. One of the basic lessons of marketing is that when you want to sell something, you have to give it an attractive name. Therefore, it may have been a marketeer for a software vendor who invented the term "vega", for use in sales talk: "Is your current software capable of computing vega, Sir? Our product can do it." It would take a rather self-assured manager to admit that he does not even know what vega is.

If the story is true, it constitutes an example of a piece of marketing savvy that has become entrenched in scientific terminology. This is not commercial use of science; it is scientific use of commerce.

Hans Schumacher

Hans Schumacher is an applied mathematician affiliated with the Department of Econometrics and Operations Research at Tilburg University. His activities in the modeling and control of dynamical systems have led him first to engineering and later in life to economics and finance.

Where Math and Art Meet



Mathematics have emerged after humans intuitively started to observe, measure and record Mother Nature's amazing phenomena. In addition to this, daily requirements like food sharing and agricultural division and more general tasks like time recording, seasons change, and building a habitat caused mathematics to rise in use. The human being has linked mathematics slowly to his everyday life needs, such as organizing irrigation canals in agriculture, building dams, and constructing ships, using the rules of geometry, volumes, and numbers. Humans paid attention to what nature suggests in terms of harmony and congruency of phenomena, namely, the shape of mountains and flora, music from the wind, rain, waterfalls and rivers. The facts suggest there is a tight relationship between mathematics and nature, beauty and art.

Text by: Maha Lharoui

A Link with Nature

The harmony and exactitude of components in nature lead to think that mathematics has played a role somewhere. Whenever there is precision, there is mathematics involved. It is enough to contemplate nature to notice the repetition of certain shapes, called fractals. Fractals are spirals that can be viewed in the heart of a daisy flower, in the leaves of a plant called fern, but also in DNA and hurricanes. Fractal design has become a trend in painting as well, where the same shape is reproduced or magnified, mimicking the natural fractals. Mathematicians have attempted to describe fractals and one way they succeeded is trough Mandelbrot sets. The book titled *'Chaos and Fractals'* by Peitgen, Jürgens & Saupe provides a thorough introduction to those who would like to know more about fractals.[1]

From another perspective, one cannot approach art in nature without considering the famous golden ratio. This ratio appears particularly in round and curved shapes, just like fractals. If one looks closely, snail shells and elephant tusks are quite similar in the way they are curved. This is because they obey the law of the golden ratio. The human body also follows the golden ratio since, for example, the ratio of the index finger length to the hand length is equal to the ratio of the hand length to the arm length. Even plastic surgery uses the golden ratio.

Mathematics and Music

As Pythagoras rightly said: "Everything is shaped following a number; beauty itself is based on metrics, the origin of the world is a number and a sound; mathematics and music"

Pythagoras was the first to find a relationship between the length of a string and the sound it produces – also known as acoustics. Scientists have come to the conclusion that music uses mathematics such as addition and logic which appears in musical notations. For example there is a half-step between the note (mi) and (fa), (si) and (do), and a full step among the other notes. Classical contemporary music is a mathematical study of frequencies that music instruments produce. Furthermore, there is a similarity between the note scale and mathematical series.

In particular, some arithmetic reflections are to be found in music compositions. The best example found is the Fibonacci sequence, named after the Italian medieval mathematician, Leonardo de Pisa alias Fibonacci . As we know, the first two numbers are 1, and every new number is the sum of the 2 preceding numbers. We obtain (1, 1, 2, 3, 5, 8, 13, 21...). What is interesting is that the ratio of two successive numbers converges, again, to the golden ratio, φ = 1.61803398.

A study by Garland (1995)[2] shows that the golden section also appears in melody lines. An example is the Hallelujah chorus in the oratoria Messiah, by Handel. The whole piece consists of 94 measures and the entrance of solo trumpets "king of kings" is played in measure 57 to 58; after about 8/13th of the whole piece (which is equal to 0.6154). After 8/13th of the first 57 measures, i.e. measure 34, the theme ''the kingdom of this world'' kicks in, another essential point in the chorus. Again after 8/13th of the second 37 measures, the entrance "and he shall reign" takes place. However, there is no argument that Handel actually used Fibonacci sequence or the golden number in his composition; he probably created a harmony that made sense to the ears and mind.

Figure 2 An example of a geometrical sculpture

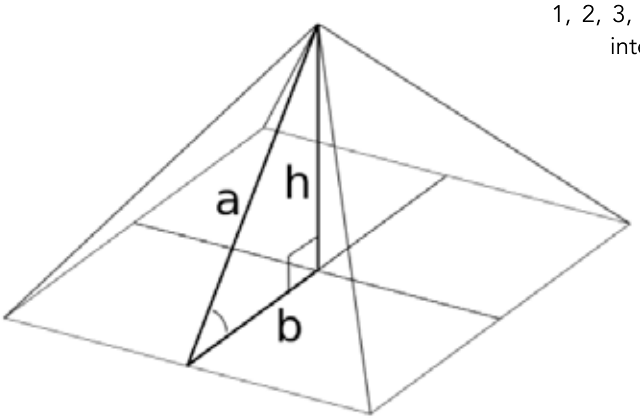


Figure 1 Pyramid with apothem (a), semi-base (b) and height (h). Possible base: hypotenuse (b:a) ratios for the Pyramid of Khufu: 1: φ (Kepler's Triangle), 3:5 (3-4-5 Triangle), and 1:4/π.

Mathematics and Architecture

The human need for order and harmony finds its root in the need for survival. For this purpose, humans sought ways for continuity and safety, and therefore they built houses based on geometry and metrics. Man excelled in housing decoration by designing shapes and drawings of all styles and dimensions. This is the case for the Egyptian pyramids, the Babylon tower, the Parthenon of Athens, but also Mayan and Aztec temples, Arabian and Persian mosques, and last but not least do not forget Pisa tower in Italy. As the great German artist Albrecht Dorr pointed out: ''geometry is the one science that can depict reality in a deep manner." The direct usage of mathematics in architecture is naturally, geometry. Figure 1 shows a possible model for how the pyramid of Khufu was constructed.

Mathematics and Sculpting

Since architecture and painting are both based on mathematics, it makes sense to assume so is sculpting. This is indeed the case, whether it is a rock or wooden sculpture – such as Arabesque - mathematics has a role to play. Geometry is crucial here to guarantee overall beauty and harmony of shapes. The golden ratio is used extensively. Euclid, the Greek father of geometry, righteously claimed that: "harmony is the twin of beauty", and where harmony is present, precision follows, and therefore, mathematics.

Classical artists do not actually consider mathematics when they apply or perceive a golden proportion. The effect of beauty and harmony is so evident that no explicit measurement is needed, it becomes an intuitive process for the artist or sculptor. The act of sculpting is more of a mental process of geometrization and abstraction rather than an actual measurement.[3]

Nowadays, there is an artistic field called mathematical sculpturing, that produces sculptures that are explicitly drawn from mathematical geometric figures. There are geometrical sculptures; where we find some works of the 20th century movement that is called Cubism, relying on the cube as a theme for sculptures. Besides that there is the polyhedral sculpture type that produces beautiful and simple pieces that look like polyhedrons, or semi-regular polyhedrons. There are also non-Euclidean geometries that use elliptic and hyperbolic geometries to produce a piece of sculpture. And finally, of course, there is the fractal geometry that shows evolving replications of a certain shape. [4]

Mathematics and Painting

If one observes the paintings by famous artists in the era of the European Renaissance such as Michelangelo and Fra Angelico, one would see a relationship with mathematics in the sense that there is a concordance between volumes, color spectrum, luminosity degree, and the choice of lines. In the Mona Lisa, Leonardo da Vinci also did a great job in harmonizing the dimensions of the body especially in the face, which is a common technique for the "portrait".

Von Koch Snowflake

Here we present an example of how to make a nice drawing using the principle of fractals.

The Von Koch snowflake is a fractal which is constructed from an equilateral triangle as follows:

1. Remove the middle third of each side
2. Build a new equilateral triangle on each of the resulting gaps
3. Repeat steps 1 and 2 for the new object

If you keep going on indefinitely, you end up with the fractal shown below.

The outline of the snowflake is incredibly crinkly. In fact, it does not contain any straight line segment at all: the middle third of any line segment has been replaced by two sides of a triangle, creating a spike. Mathematicians measure the crinkliness of a fractal by the fractal dimension, a generalization of our ordinary notion of dimension. The outline of our snowflake is too crinkly to be one-dimensional. On the other hand, it clearly is not two-dimensional either, since it contains no area. In this case, the dimension lies between 1 and 2, in fact it is equal to log(4)/log(3) = 1.2619.

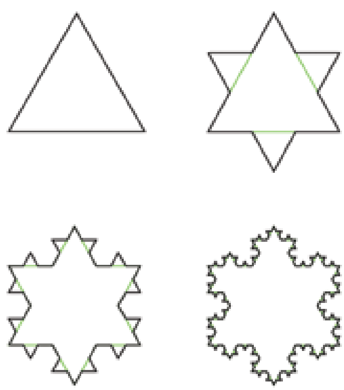


Figure 3 The Von Koch Snowflake[5]

Conclusion

All in all, mathematics are omnipresent in all types of art. It is also clear that mathematics have wide applications in every part of life. Design of houses, parks, bridges, they all follow mathematics and physics. Although arts use the right side and mathematics uses the left side of your brain, both have a creative aspect to them. Both disciplines are creative endeavors with analytical components that are essential elements of contemporary civilization. Mathematical formulas and geometric figures can be aesthetically pleasing themselves. That is why several mathematicians consider mathematics to be an art and not merely a science. Physicist Wolfgang Pauli said: "It is more important for an equation to be beautiful than exact,"[6] suggesting an aesthetic appreciation of what is implied by the mathematical statement of cause and effect.

In my personal opinion, I believe that the greatest mathematical findings were based on inspiration, which is a right brain process, such as Archimedes' Eureka. I view mathematics and arts more like the yin/yang symbol, they are one in two, and two in one. •

References

1. http://fractalfoundation.org/category/natural-fractals/
2. http://www.pages.drexel.edu/~jjn27/mathandmusic.pdf
3. http://www.mi.sanu.ac.rs/vismath/barrallo1/
4. http://pages.towson.edu/gsarhang/67%20-%2074.pdf
5. http://plus.maths.org/content/artmathx
6. http://staff.washington.edu/rockne/math-art.pdf

The Vehicle Routin

with Private

In practice, many transportation companies lower their cost by hiring competitors to serve customers that they cannot serve efficiently with their own trucks. This problem is named the VRP with Private Fleet and Common Carrier and is a recent (2005) extension of the well-known VRP. This article gives an introduction to this problem.

Due to small margins, the crisis, seasonal fluctuations and the CO2-emission reductions, transportation companies have to lower their costs. In order to increase their efficiency, they hire a competitor to deliver to certain customers when either it is more economical to let the competitor deliver it or when it is impossible to deliver to all the customers by the own fleet. Hence, the goal of the transportation company is to find a feasible routing such that each customer is either served by the private (own) fleet or by the common carrier (competitor) such that the total costs, which are the routing costs and the outsourcing costs are minimized.

This problem is known as the VRPPC and the set-partitioning model uses the following notation: Define the set of all feasible routes by $\Omega = \{1, ..., |\Omega|\}$, $a_i(r)$ is equal to one if route $r \in \Omega$ visits customer $i \in N$ and zero otherwise, p_i is the penalty incurred when customer i is not delivered by the own fleet, $c(r)$ is the total cost of route r and there are M identical trucks. The only decision variables are x_r, which is equal to one if route r is selected and zero otherwise. This gives the following model:

$$\text{minimize} \sum_{r\in\Omega} c(r)x_r + \sum_{i=1}^{n} p_i \Big(1 - \sum_{r\in\Omega} a_i(r)x_r\Big) \qquad (1)$$

$$\text{subject to} \sum_{r\in\Omega} a_i(r)x_r \leq 1 \qquad \forall i \in [n] \qquad (2)$$

$$\sum_{r\in\Omega} x_r \leq M \qquad (3)$$

$$x_r \in \{0,1\} \qquad \forall r \in \Omega \qquad (4)$$

The restriction that at most M trucks are driven, (3), and the integer restrictions, (4), are the same as in the classical VRP. The first difference is in (2), which state that each customer is served at most once instead of exactly once. The second difference follows from the first difference and is in the objective function, (1). Where in the VRP each customer has to be delivered to, there is now the option to outsource a customer and when a customer is outsourced the company incurs a customer specific penalty. This penalty represents the amount which has to be paid to the competitor for delivering the order to the customer.

Due to the difficulty of the problem it is not possible to use exact methods for decently sized instances such as the test-instances of Bolduc et al. [1], which are given in Table 1. In these instances, the total capacity of the trucks is around 80% of the total demand of the customers and the penalties are high. The penalties are so high that for each instance it holds that for many customers the penalty is higher than twice the distance costs to the customer.

Instance	Prizes	Trucks	Customers	BKS
CE-01	1964	4	50	1119.47
CE-02	3551	9	75	1814.52
CE-03	4076	6	100	1919.05
CE-04	5869	9	150	2507.44
CE-05	7742	13	199	3096.87
CE-06	2036	4	50	1207.47
CE-07	3737	9	75	2004.53
CE-08	4199	6	100	2052.05
CE-09	5989	10	150	2422.74
CE-10	7985	13	199	3383.00
CE-11	8684	6	120	2330.94
CE-12	4365	8	100	1952.86
CE-13	8829	6	120	2858.83
CE-14	4379	7	100	2213.02

Table 1: Test-instances by Bolduc et al [1].

Due to the additional outsourcing option, one cannot use the vast literature on the classical VRP without altering these heuristics. For these test-instances, one already has the issue that not all the customers can be delivered to and one has the option to outsource more customers than is necessary capacity wise.

A common initialization in the few papers on the VRPPC is the following. First, the customers are temporarily divided into the private group, which are the customers that will be served by the own fleet, and the outsource group, which are the customers which will be outsourced. This division is as follows: order the customers in descending order based on the ratio of the penalty p_i and the demand q_i,

ng Problem
Fleet and Common Carrier

i.e., p_i/q_i. Then, determine h such that the total demand of the first h customers is less than the total capacity of the trucks and the total demand of the first $h+1$ customers is strictly larger than the total capacity of the trucks. Now, the first h customers are assigned to the private group and the others to the outsource group. Note that this division does set all the customers in the private group when there is enough capacity. After this division, the classical insertion heuristic is used. The insertion heuristic first determines seeds, often the customers which are the farthest away from the depot[1]. Then, the customer which is not yet served by a truck, that has the least insertion cost and is feasible to insert, will be inserted in the corresponding truck. The insertion continues until all the customers of the private group are inserted or until no feasible insertions are possible. Note that the insertion heuristic does not take the penalties into account, so it could be the case that a customer is inserted while it has a lower penalty than insertion cost. Each route is then improved with $4-opt^*$, which tries to lower the distance of the route. Relevant questions are: How good is this initialization? And is the initialization important for the improvement heuristic?

To answer the latter question, a TabuSearch heuristic is used. The basic idea of TabuSearch is to iteratively search the small space around the current solution for the best move that is not tabu. At each iteration, the best move is executed, where $4-opt^*$ is used on the routes that are changed, and the list which contains the moves that are tabu is updated. Typically not the whole move is stored but for the next j iterations it is forbidden for customer i to go to route r. Naturally, one cannot immediately use the TabuSearch for the classical VRP. Therefore, the TabuSearch is tailored to the VRPPC as follows. First, a garbage truck is added which has the customers which are not served by the private fleet. Second, at each move it decides whether it is more profitable to drive a route or to sell all the packages of the route. Note that the packages are not moved to the garbage truck if the route is not driven. Third, its objective function is to minimize the routing costs, the penalties incurred by outsourcing and the penalty of the infeasibility of the solution. The first tiebreaker is to minimize the total distance of the routes that are driven plus the total infeasibility. The second tiebreaker is to minimize the distance of the routes that are not driven minus the penalties they collect plus the outsourcing cost of the garbage truck. The second tiebreaker is there to force the solution to fill the trucks which are not driven in the hope that a profitable route follows from this.

Instance	Init(gap%)	Tabu(gap%)	CPU(s)
CE-01	10.16	0.00	4.86
CE-02	16.59	0.21	6.20
CE-03	9.30	0.94	19.59
CE-04	12.73	1.07	41.20
CE-05	16.62	1.99	72.38
CE-06	10.04	0.00	4.30
CE-07	15.24	0.32	7.03
CE-08	8.63	1.23	12.30
CE-09	17.58	2.73	39.94
CE-10	12.00	0.76	72.66
CE-11	30.88	3.38	26.98
CE-12	24.38	0.66	16.95
CE-13	24.83	4.17	26.14
CE-14	16.42	0.05	17.16
Average	16.10	1.25	26.26

Table 2: Initialization commonly used in the literature.

In Table 2, it is given how far off, in percentage, the initialization in the literature is compared to the best known solution (BKS). It shows that the average gap is over 16% and that after the TabuSearch it has shrunk to just over 1.2%.

As stated before, only the selection uses the penalties while the insertion does not. To mend this, an adapted version of the insertion heuristic, the ProfitInsertion, is used. The difference is that the seeds are the ones which have the highest profit unit wise[2] ($(p_i - D_{0,i})/d_i$, where D is the distance matrix and 0 the depot). Then, instead of insertion distance, the unit profit (which uses the insertion distance) is used to determine which customer is inserted into which truck. Similarly as in the normal initialization $4-opt^*$ is used. Also, in this case it is not necessary to pre-select which customers will be outsourced and which served, since the ProfitInsertion will decide which customers are served and which are not. From Table 3 we see that the ProfitInsertion initialization is sometimes slightly worse than the initialization in the literature, but most of the times it is a lot better since the average gap decreases to below 10%. Also the TabuSearch profited from the better initialization since the average gap after the TabuSearch decreased to 0.4%. Note that the ⟶

[1] The customer which is farthest away is used as seed. Then a certain number of customers that were closest to this seed (insertion based) are temporarily removed. Then, the next seed was chosen and again a certain number of customers that were closest to this seed are temporarily removed. Repeat his until each truck has a seed. This was used to avoid two customers as seed which are close together.

[2] Similar to the first footnote, but now the customers which have the most unit profit are temporarily removed.

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largest gap after TabuSearch is now 1.2% which is much smaller than the previous largest gap which was 4.1%.

Instance	Init(gap%)	Tabu(gap%)	CPU(s)
CE-01	10.18	0.00	4.36
CE-02	12.60	0.25	6.84
CE-03	9.41	1.20	15.66
CE-04	6.48	1.04	33.91
CE-05	9.70	0.80	70.77
CE-06	10.65	0.00	3.05
CE-07	7.69	0.40	9.48
CE-08	8.97	0.53	19.05
CE-09	8.07	0.57	39.97
CE-10	12.87	0.70	75.88
CE-11	11.18	0.06	16.84
CE-12	12.45	0.11	13.02
CE-13	3.98	0.22	16.67
CE-14	7.47	0.05	10.63
Average	9.41	0.42	24.01

Table 3: Initialization using the profit per unit.

Before, we saw that the ProfitInsertion seems to give better results, but how good is the original initialization? To test this, a random initialization is used to find out what the influence of the initialization is on the TabuSearch. The random initialization draws for each customer an integer r, which is uniformly drawn from the range $[0, M]$ (0 stands for garbage truck), and the customer is inserted in the corresponding truck. Of course $4-opt^*$ is used on each route to lower the distance. The random initialization could give infeasible routes to start with and what are the costs of an infeasible route? For simplicity it is chosen to penalize each unit of infeasibility by 1 and naturally there is no infeasibility cost when a truck is not driven. The results of the random initialization can be found in Table 4.
Not so surprisingly, the gap after initialization is large, on average over 100%. What is surprising is that the TabuSearch has an average gap of just over 1%, which is slightly less than the gap of the TabuSearch with the initialization used in the literature. This could imply that the TabuSearch heuristic is quite powerful for these instances. Taking a closer look at the instances shows that for CE-13 the initialization of ProfitInsertion is better than the solution after TabuSearch for the other two. Moreover, the TabuSearch gives comparable results with all initialization on all instances except CE-11 and CE-13. On these instances the initializations are too far off for both the random and the original initialization and the TabuSearch is not able to recover in time from these starting points.

These results are an indication, but one should do more testing before concluding whether or not the initialization

Instance	Init(gap%)	Tabu(gap%)	CPU(s)
CE-01	70.06	0.00	4.25
CE-02	82.53	0.00	10.02
CE-03	100.56	0.99	18.72
CE-04	110.52	1.13	39.92
CE-05	126.95	0.55	72.59
CE-06	65.29	0.22	3.22
CE-07	75.64	0.22	5.92
CE-08	94.05	0.82	18.72
CE-09	121.29	0.90	32.22
CE-10	115.77	0.71	70.81
CE-11	142.93	3.60	21.53
CE-12	111.18	0.11	13.41
CE-13	111.82	5.45	26.91
CE-14	90.85	0.05	13.84
Average	101.39	1.05	25.15

Table 4: Random initialization.

is important. First, one should do multiple runs on these instances, e.g., different seeds and different permutations of customers and trucks. Second, these test-instances only show one side of the problem since in each instance the penalties are high and all trucks are used in the solutions found. Hence, what happens when there is a different penalty scheme, i.e., one where only half of the trucks should be used? What is then the best initialization and what will the TabuSearch do?

References

[1] Bolduc, M.-C., Renoud, J., Boctor, F. and Laporte, G.: A pertubation metaheuristic for the vehicle routing problem with private fleet and common carriers, Journal of the Operational Research Society 59 (2008), 776--787.

Sybren Huijink
PhD Candidate

Changes in the Bachelor Program EOR

Some changes in the bachelor program have been implemented this year, most of which can be viewed as an improvement, some of which can be viewed as a necessary measure. However, some confusion is present among Econometrics and Operations Research students of what these changes are exactly and how this might affect them. Jelle de Rooij and I set out to interview professor van Dam, the academic director of our beloved study, to get all the answers.

Text by: Vince Dentener

First things first, some minor changes are made that effect the would-be econometricians of the future. For new first-year students, the registration deadline next year will be the first of May, in contrast to this year, where you needed to be completely registered before the first of September. Next to this, high school scholars are encouraged by the minister of education to make a well-considered choice for a study, by attending trial-classes and/or open-days, all in an effort to reduce the average study time and drop-out of students. Tilburg University would also like to urge all scholars to visit the study advisors, who can give real insight into everything regarding the study!

Now we proceed to the changes in the first bachelor year. The first year used to only have quarterly courses, with three courses each quarter, two 6 ECTS and one 3 ECTS course. From now on the first year has two semester-wide courses, which already is default in the rest of the bachelor. The first one is "Introduction to Probability and Analysis", which is

> **'Tilburg University would also like to urge all scholars to visit the study advisors'**

in semester 1. This course replaces the old quarterly (3 ECTS) courses "Proofs and Techniques" from quarter 1 and "Introduction Probability" from quarter 3. The second semester-wide course is "Probability and Statistics" in semester two. This (6 ECTS) course as a whole used to be in quarter 4, but has been smeared out over the entire second semester because students find this course particularly tricky. Content-wise

'The future EOR student thanks you!'

the above courses do not contain any changes.

Those who are paying attention will notice that 3 ECTS have been moved from semester 2 to semester 1. To compensate for this, the old course "IT-skills" from quarter 2 has been cancelled. The need for this course was a subject of debate, because since this year students make use of the computer in the "Linear Algebra" course and already made use of it in the "Linear Optimization"course and other first-year courses. The missing 3 ECTS in semester 2 also need to be filled up. The course "Introduction to Finance" in quarter 4 is expanded to "Introduction to Finance and Actuarial Science", adding the actuarial track which is normally given in year 2, first semester.

The course "Linear Optimization" has also undergone some changes. The course has a new professor due to the retirement of professor Haemers, it uses a new book and content-wise the emphasis now lies more on linear optimization programming in general. Furthermore, the 1 hour instruction classes of the course "Linear Algebra" have been replaced by instruction videos placed on Blackboard. There has been a lot of positive feedback regarding these videos so the possibilities of expanding this concept to other courses are currently being discussed. Finally, starting next year, all first year lectures will be given in English only. The possibility to speak Dutch will remain present in the interactive and small work and computer classes, however. This measure is mainly to attract more international students.

Year 2 also has some minor changes. To replace the actuarial part of the finance track which is now in the first year, an empirical part will be added to create the new course "Introduction Asset Pricing". This course is now in semester 1 but will be moved to semester 2 next year because it corresponds better to the other courses given there, which are more"applied"of nature. In return the course "Computer Programming" will be moved from semester 2 to semester 1 next year because it corresponds better to the more "methodical" courses given there. The added empirical part mentioned above originates to some degree from the third year course "Econometrics 2", which has been cancelled.

There are not many other changes in the third year. From now on, the students will have the possibility to write their bachelor thesis in the fall, which means that it is possible for students to graduate in January. To accompany this, starting 2014, all master programs can be started in February as well! This measure has been applied due to the "Harde-knip" law installed by the government recently, allowing students to save themselves half a year of study delay and of course, half a year of study costs!

Some changes are also made to the master tracks for those who are interested. This year the master "The Economics of Pensions and Aging" has been cancelled. Netspar, (The Network for Studies on Pensions, Aging and Retirement) was very involved with graduates of this master, so therefore two different "Netspar-tracks" have been introduced and added to the masters "Quantitive Finance and Actuarial Science" and "Econometrics and Mathematical Economics". Finishing these tracks will result in the extra achievement being mentioned on your degree. Also Netspar will help these students acquire an internship, traineeship or job!

First Year EOR in Summary

Study Unit 1	Study Unit 2	Study Unit 3	Study Unit 4
Introduction Analysis and Probability	**Introduction Analysis and Probability**	**Probability and Statistics**	**Probability and Statistics**
Macroeconomics EOR	**Mathematical Analysis**	**Mathematical Analysis 2**	**Introduction Econometrics**
Linear Algebra	**Linear Optimization**	**Microeconomics EOR**	**Introduction Finance and Actuarial Science**

As a short term goal, the department of Econometrics and OR is currently improving their possibilities for following an exchange program and improving the exchange program itself. They are very busy with acquiring an even broader network with more and more universities to increase the number of exchange options. Next to this they are negotiating to make every exchange a full 30 ECTS program. Currently, due to curriculum discrepancies between our university and others, exchange students sometimes have to complete extra courses on top of the exchange program to meet all curriculum demands, which is of course an unwanted situation. Furthermore it has come to the attention of the department that some students believe that a third year exchange is not possible during our EOR study. They want to emphasize that it is very much possible! In fact, the department encourages all students that might want to participate in an exchange program, to come forward and make an appointment with the exchange and study abroad advisor. They will be happy to look at the possibilities for a tailor-made exchange program just for you!

All the above changes in the bachelor program have, for the most part, been implemented to improve the bachelor program to fit all needs. This would not have been possible if students did not express their healthy criticism and general opinions about our study. The department wants to thank all who expressed their opinion and wants all students to know that their opinions are most certainly listened to. So to all students, give feedback and fill in course evaluation forms. The future EOR student thanks you! •

Evaluating Experiences

Now that the first semester is finished for the first-year econometricians, it is time to interview one of them. We chose to interview Nicole Verbeek, who did not follow the regular path to studying EOR. In this article we address both some positive and negative aspects she has experienced so far.

Nicole Verbeek

AGE: 20

Began studies in 2013

How Nicole started EOR

After Nicole finished high school, she took a year off and went backpacking in Australia for nine months. Last year she started the study International Business Administration (IBA) in Tilburg. Despite of the fact that Nicole only did 'Wiskunde A' in high school, she discovered that she preferred the heavy subjects, i.e. the ones primarily concerning math. So after she finished her first year, she decided she wanted to switch studies. Luckily this was possible and as of this year, Nicole is studying econometrics.

How is it going?

Now that she has been studying EOR for a few months, she can compare the studies a bit: "When I was studying IBA, I also had courses like macroeconomics, but they were easier than they are now, since the focus is more on the mathematical models now. Subjects in general are more difficult now, since in IBA, the answer was the most important part. Now, however, how you find your answer is very important." In spite of this, she thinks EOR is a really nice study and things are organized better. However, there are always ways to improve. Nicole thinks it would be better if all the lectures would be in English from the start. Right now, she has books and readers in English, but in the lectures Dutch terms are often being used, which can be confusing sometimes. Nicole did pass all her exams, but she mentioned that "Linear Algebra" was really difficult and she spent a lot of time on it. Compared to IBA, she needs more time for studying in general.

What is great about EOR

Nicole likes the content of the most subjects, although it is a little bit too theoretical sometimes and she does not see how the contents are applicable in practice. In IBA she had two semesters the first year, whereas now she has 4 units, which she thinks is better. Besides that, she really likes the short videos that are available for the course Linear Algebra: "Sometimes it is hard to concentrate for the whole lecture, but with those short videos you only have to concentrate for about 15 minutes. Besides, if you miss something, you can always watch it again."

'Studying is in fact all about planning'

Studying

Studying was difficult for her when she came back from Australia, because she did not study for a long time. After her first year of IBA though, she is now fully back in the studying modus. "It is now easier to plan," she says, "and studying is in fact all about planning." Furthermore the videos help her an incredible amount. She thinks she only passed the "Linear Algebra" exam because of the videos. The videos from Khan-Academy helped her the most. Besides studying, of course Nicole has some free time as well, which she mostly spends playing sports.

What is not so great

"During the tutorials, I feel it is quite frustrating that you have to raise your hand for about half an hour, before you are able to ask your question, just because there are too few tutors. It would be very nice if they would give the solutions of the exercises." Nicole understands that if you hand out the solutions, not everyone will come to the tutorials anymore, but she thinks it would be a good idea to print the solutions and distribute them in the tutorial. "In this way you can just look at the solutions if you have a short question and you do not have to wait until the tutor has time. This worked perfectly in IBA", she said. Right now, she has the idea that she is waiting for quite some time to ask something which turns out to be rather easy afterwards. It would be great if there are either more tutors or if solutions are available during tutorials. •

Good for Nothing

When I was still a student our neighbor once asked me for help. 'René, gij studeert toch wiskunde op de universiteit ofzo?' 'Ja, dè klopt', I said. 'Kunde gij mijn dan effe helluppe meej mijne belastingoangifte?' 'Jouw belastingoangifte?... Euh,... maar doar heb ik helemoal gin verstaand van.' 'Gin verstaand van? Mar gij zit toch op de universiteit?' 'Leren jullie dè dan nie mir tegewoordig?' 'Euh,... nee.' 'Mar wiskunde is toch ok meej allemoal van die cijfers, dan mot die aongifte vur jouw toch un fluitje van een cent zen?' 'Euh... nou, ik heb er echt totoal gin verstaand van. Belasting des een aandere studie. Bij wiskunde rekene wij mistal meej letters in plek van meej cijfers. As ge vroage het over de belasting kunde beter unne boukhouwer belle.' 'Oh…' I never saw a man more disappointed than him.

Now, about 25 years later, I still cannot even fill out my own tax forms. Neither can I build a wall, wire a house for electricity or repair broken rain pipes or a leaking roof. As one of the only men in our street, I cannot weld iron or check the oil level of my car. Also my female skills are undeveloped: I can knit, iron nor polish. I do not even know how to slaughter a chicken decently. Apparently also my neighborhood knows that I am good for nothing. They never ask me to help them with a serious task. Although, there is one exception: if I wanted, I could fill my days with giving private lessons in Mathematics to adolescents.

I am afraid that I am not the only so-called high-educated person who misses some basic knowledge and skills. A lot of us at least lack basic knowledge about farming. Several times already I had to explain to university graduated people that cows have to give birth to a calf every year in order to keep the milk flow going. In fact, fertility is an absolute condition for a dairy cow to get old. No calf, no milk and no milk, no future. It is as simple as that. To give another example: last month, some talented youngsters visited my farm. Believe it or not, but they did not know the difference between hay and straw and asked how many times a day we let out the calves.

Spending many years in our educational system does not guarantee that you acquire all the necessary skills and knowledge that you need in life. How bad it is depends on which discipline you specialize in. Personally, I have good experiences with vets. If you see how they do, for instance, a caesarean operation, then building a house or repairing a car must be a piece of cake for them. Furthermore, I bet they know how to slaughter a chicken. I am less optimistic about my own GP but I do not see him often enough to judge him fairly. Also, my accountant scores better than a mathematician because he at least knows how to fill out a tax form.

How about you, as an econometrician? You are stuffed with knowledge on economics, statistics, mathematics and a spark of philosophy, but does it help you when you have to survive on a deserted island? Can you build a house and collect and prepare your own food if you really have to? Can you make your own clothes? I am afraid that you do not score much better than I do. Econometricians might be less autistic than mathematicians in general; they are not more handy, however. I want to conclude with a quote from one of my neighbours who has only finished primary school: 'Academics: the more titles they have, the less they can do.'

René Peeters

René is a part-time assistant professor in mathematics at the Tilburg School of Economics and Management. Together with his wife he runs a dairy farm in Dongen. He is interested in discrete mathematics, Celtic music and athletics.

International Business Tour
Singapore 2013


ASSET Econometrics
1979-2014

EXPLORING THE LION CITY

Last October I joined the International Business Tour (IBT) to Singapore. I can tell you that it was an amazing experience to never forget, and I am sure that my fellow students who also joined the trip will agree. Although it was officially called a study trip, there fortunately was enough time left to do some fun activities, sightseeing and of course to go clubbing!

It all started on the 7th of October. In the afternoon, we gathered at Tilburg Central Station to take the train to Schiphol together. From there, we would fly to Helsinki, where we would switch to our flight to Singapore. Altogether the journey would take us 16 hours! However, the flights were not as exhausting as I had expected, since most of us slept the majority of the time. When we arrived in Singapore, we got a warm welcome! During our stay, the temperature was above thirty degrees Celsius every day. Perfect in my opinion! The first day we could not do much more than have dinner and go to a bar or get some sleep.

Emmy Coumans

AGE: 21

Began studies in 2010

The next day we had a busy schedule. Guided by local Singaporean Desmond, we did a bus tour through the city. Afterwards, we visited the famous Sultan Mosque on Arab Street. People that had not taken care of appropriate clothing themselves received a decent outfit from the Mosque. This resulted in a couple of good pictures! In the evening we did a very nice night safari in the Singapore Zoo, followed up by an animal show.

You can probably imagine that we were very tired after this long first day, so we went back to the hostel. The next day we visited the Nanyang Technological University. It was very interesting to meet the locals and to get to know them. We did a campus tour, attended a lecture in macroeconomics and played some games with the local students. Afterwards, we all went out for dinner together.

The next day we had some free time that I used to do some shopping. Orchard Road is to Singapore what Fifth Avenue is to New York, so that was the place to go. This road is loaded with luxurious stores and big shopping malls, and was definitely something I had planned to go see in my free time. I can tell you that I was not disappointed! In the late afternoon, we had to go back to the hostel to change into formal clothes and go to Flow Traders. After a presentation about the company with a drink and a lot of snacks, we went to the 39th floor for a tour through the office, followed by a Friday afternoon drink. This gave us the opportunity to chat with the employees, while enjoying the great views of the city. Afterwards, we went for a ride in world's biggest Ferris wheel: the Singapore Flyer.

Luckily, we had a relaxing day planned after this. We went to the harbor to board a boat for the 'morning glory cruise'. We started off with some pretty bad weather, but fortunately the sky cleared so we could still enjoy the sights such as the Indonesian coastline. After the boat tour, we visited the Maritime Gallery, where we were accompanied by a very enthusiastic guide. During this whole trip we noticed that the people living in Singapore all love their country very much and do not speak badly about it, like the Dutch are famous for complaining about things like the weather and politics.

The next day, which was Sunday, we had

a more active day planned. We would take a small 'bum boat' to the nearby island Palau Ubin, where we would go hiking, mountain biking and kayaking. The island is extremely beautiful, since most nature is preserved here. This is very different from the main island, which is full of skyscrapers. The island is mostly pure jungle, with some walking and mountain biking trails through it. The sights during this mountain biking and hiking were simply breathtaking.

In my opinion, the most fun part was the moment when we went to the kayaking beach. This was also the first time during this trip that we could get into some water to cool down from the high temperatures in Singapore. After this sportive day we took the boat back to the main island of Singapore where we all had dinner in a food court. A food court is something very typical for Asian countries. It is a large hall full of small huts where you can order all sorts of food. This was a great way to have dinner with all of us together, while everyone could still eat whatever he or she wanted. Moreover, the food in the food courts was very cheap compared to the food in restaurants, while the quality was still great!

The next day it was already Monday the 14th of October and we slowly began to realize that the trip was already coming to an end. We would fly back to Amsterdam in two days, on Wednesday the 16th of October. On Monday we had a busy day, since our final two formal visits were planned. In the morning we visited Philips Lumileds, and after lunch we rushed to Singapore Management University (SMU). Personally, I thought the visit to Philips was very interesting. During our visit, there were actually quite a few Dutch employees present, so we were able to ask questions and get answers and more information about Philips in our own language. They gave a presentation about Philips, what Philips does and what possibilities it offers to (potential) employees. After this we got an elaborate tour through the LED production factory. It was very interesting to see all that comes with producing LED lights and to see the overall production process. To end the visit, we went for lunch together in a nearby food court, where we also got the opportunity to ask more informal questions to the Dutch Philips employees, for instance about the quality of life of Dutch expats in Singapore.

After lunch we went to the city center of Singapore, where SMU is located. It was nice to see this university as well, because it is totally different from the other university we had visited. This university is much smaller, since it is situated in the city center of Singapore. We were warmly welcomed by a special 'visitors committee' and we learned a lot about the student life in Singapore. At this university, most students are a member of some kind of club. This could be anything, ranging from a chess club or a debate club to an extreme sports club and a salsa dance club. This university only teaches to small groups (with a maximum of thirty students) and finds active participation in class to be extremely important. For it is a management university, the courses have a very business-like approach, which I really liked. We concluded the visit with a campus tour, after which we all had dinner together.

The next day was a busy day full of fun activities. It was the 15th of October, which was a national holiday in Singapore: Hari Raya Haji. This holiday is especially for the Indian citizens →

of Singapore, so we decided to go to Little India in the morning. There were a lot of stands where Indian items were sold, and it drew a lot of visitors. In the afternoon, we went to the Marina Bay Sands building, which has become the eye catcher of Singapore since it was built a couple of years ago. We went up to the observation deck, from which the view was absolutely amazing! After taking some nice pictures we had a drink in the rooftop bar. I loved this, because it was just the perfect location for a nice drink. Besides a clear view of Singapore's skyline, we also had a view on the infinity pool: a truly unique pool on the roof of the building. The pool was exclusively for hotel guests, but somehow some people of our group managed to get inside! After the drink we split up the group into smaller groups. Most people went to see the 'Gardens by the Bay' or the famous Singapore Merlion. This is a big statue; half mermaid, half lion. That evening we all went to 1-Altitude; the highest rooftop bar in the world. This was definitively the most special memory of this trip for me. The view from the rooftop bar was simply breathtaking and the music was also great.

After this amazing night at the rooftop bar, we had already got to the last day of our trip. Since our flight was scheduled in the evening, we had time to go to the beach during the day. We went to the very popular island Sentosa, which is known as a fun island. You can do a lot of fun activities there: think of some amusement parks and the most beautiful beaches of Singapore. We had a great last day, relaxing on the beach with the best weather of the entire trip. A perfect end to a perfect trip. •

Thomas van Manen

AGE: 19

Began studies in 2012

Orientation Day: Inspirational, Insightful and Interesting

On the 28th of November, the annual Asset Orientation Day took place. This is a day for every EOR student to find out more about the master programs and get acquainted with possible future employers.

The day started with two different cases. One was linked to the Operations Research & Management Science (ORMS) master and was organized by Pointlogic, whereas the other case was linked to the Quantitative Finance and Actuarial Science (QFAS) master. The QFAS case, that I chose to attend, was organized by the econometrics department. The goal of this case was to find the best possible asset mix for our imaginary pension fund, using the given data and limitations. I think the case was a great way to gain some insight in what to expect from the QFAS master and it will definitely help me in choosing my future direction.

After the cases were finished, there were two rounds of presentations from two companies. One of the two presentations was given by MIcompany, a company operating in the field of commercial analytics. This means that they analyze customer data from major companies such as KPN, Microsoft or Randstad. By analyzing their customer data they discover growing opportunities, but they also help companies in understanding their data.

What I found very interesting about this presentation was that it showed an entirely different side of econometrics. MIcompany does not focus on operations research or finance, they focus on the marketing side of econometrics. They operate in a market that is growing very rapidly. In the past, there used to be very little customer data for companies to work with. However, these days companies are increasingly bombarded with loads and loads of information, since so much data is digitalized.

The other presentation was given by ITrainee. ITrainee is a company that trains their employees in a software package called SAP. Like a lot of the people attending the presentation, I had never heard of this software package before. SAP enables companies to manage their business operations and customer relations and it is apparently a very extensive and widely used package. Some years ago, there was a lot of demand for well-trained SAP-specialists, but very little supply. This made the founders of ITrainee decide to set up a company that trains people to become SAP-specialists.

Once you are admitted to the traineeship, you follow a training program for three months. After the training, you receive an internship at one of the companies that has requested a SAP-trainee. Some examples are Rabobank, PostNL or the Ministry of Finance. If you match well with this company, you will get a permanent contract there. ITrainee is therefore more of an intermediate between your studies and your future employer.

At this point, it was time to have some dinner and to have a look around at the information market, where there was more information about the different masters. Afterwards, the last part of the day had arrived, with a presentation about the master programs. While the cases and various presentations gave some insight on the applications of the different masters, the last presentation told us specifically what the masters involved: the different subjects and the possible companies where you could end up working with each master.

All in all, I think the Orientation Day was a very insightful and interesting day, and I think it is safe to say that it has helped everyone in choosing their future direction. •

> **‘It will definitely help me choosing my future direction’**

McMastering

Anniek's Exchange to Canada

Last December I received the message that I was chosen to go on exchange to McMaster University. Now, 12 months later, I cannot imagine this was already a year ago.

The first day of lectures at Tilburg University was the day I was flying to Toronto. After some running at O'Hare Chicago to get to my connecting flight in time, I arrived at Pearson International Airport in the late afternoon. I decided to spend the first night in a hotel at the airport and travel to Hamilton the next day.

After a good night sleep my mentor from the university was so kind to drive me from my airport hotel to Hamilton by car. My first day consisted of searching for a place to live and meeting the other Dutch exchange students who had already arrived. Previous exchange students to McMaster advised me not to live in the residences on campus because only the first year students live there but instead search for a place in the area near the campus where all the older students live. I was glad that I found a nice room by the end of my first day with 7 other students from Mac. As a side note: no one refers to McMaster as McMaster University, instead everyone refers to the university as "Mac". So when you meet someone you tell them you go to Mac and not to McMaster.

Because classes would not start until the 5th of September I spend the first week and a half meeting other exchange students, making some trips to Niagara Falls, Toronto, a spare rib festival and partying for FROSH week (welcome week for the first year students except that the actual first year students are not welcome at the parties in the evening because they are not 19 yet).

McMaster University
At Mac I am a student in DeGroote School of Business, which means that I was supposed to take the majority of my courses from the business faculty. After some shifting in my schedule I decided to follow the courses; "Management Skill Development", "Consumer Behavior", "The Economics of Aging" and 'Insurance and Risk Management'. Because these courses are all third and fourth year courses (an undergraduate program takes four years in Canada) the groups are small and most classes are only once a week for three hours.

Studying Econometrics in Tilburg and studying business at McMaster is really different. Not only is all the decent mathematics gone in the courses but they also overload you with work. For one course I have mandatory participation in class, eight assignments, weekly cases, a midterm and a final. Even though these courses do not have a lot of added value to my econometrics program I think getting some insights in other areas such as marketing and management and the exchange experience overall is a really valuable experience.

Anniek Joosten

AGE: 21

Exchange at DeGroote School of Business, McMaster University, Canada

Another big difference between Tilburg and McMaster is the school spirit. When walking around campus you see a lot of maroon and grey (our school colors). Wearing school clothes is part of your daily outfit at McMaster and literally everyone has something McMaster on them every day. Most people do not really bother to dress nicely for school and usually dress up in sweatpants with a McMaster sweater. I have even seen some people in their pajamas.

The McMaster football team, the McMaster Marauders, is the proud of the school. They have been the best university team a few years in a row and that is something, they think, everyone has to know. On campus we have a big football stadium and every other Saturday they will play a home game.

Homecoming is the biggest university party of the year. Homecoming means that the alumni return to the university and the football team will play a home game, which everyone attends. Although for the current students it is not so much about the old students returning they take the opportunity to party all day and dress completely in maroon and grey.

Hamilton & Traveling
The university is located in Hamilton and according to Canadians this is a rather small city. The city has 500.000 inhabitants and is also known as Canada's waterfall city because it has lots of them. Hamilton itself is not the most vibrant city but because of its great location this is not really a problem. Stuck between Toronto and Niagara falls, Hamilton is great if you want to travel inside Ontario, Quebec and the United States.

School took a lot of time during the week so in the weekends we tried to travel a lot in Canada and the United States. Small trips can be made to for example Niagara Falls, which I visited four times, or Toronto. Because I have Fridays off I can also travel a bit further as well, for example, to Montreal.

The last weekend of September we took a trip to Algonquin Provincial Park. Canadian fall is known for its colorful trees and beautiful nature and I figured going on this trip was a great opportunity to see this. Together with 60 exchange students we went canoeing and camping and this was a lot of fun. The only way to travel through the park is by boat or canoe and we choose for the last option. The colors of the trees were truly amazing and we saw a real Canadian Moose too! At night we had a barbeque and afterwards paddled back to our campsite. At the middle of the lake we paused to look at the stars and this was the best part. Because the park is so far from civilization there is almost no pollution in the air and the sky is really clear.

Canada

Canadians are extremely friendly and it took me some time at the beginning to get used to this. They apologize for everything. Seriously almost every sentence starts with "Sorry". They hold doors open for each other and when leaving the bus they thank the bus driver. Even when you are sitting in the back of the bus you either go up front to tell him or shout it through the bus.

Another remarkable thing about Canada is how big this country is. Compared to the Netherlands we fit 240 times into Canada but they only have half the amount of people living in their country compared to ours. That is why Canadians think Europe is just one big country and their knowledge on Europe and the Netherlands is not that great. People have told me that they think The Netherlands is part of Scandinavia, that we speak the same language as the Germans or that English is our first language, Holland and the Netherlands are two different countries, Amsterdam is a country on its own, and I think they will never get the "I am Dutch and from the Netherlands" because that just seems to confusing.

Sports

Canada's proud is definitely hockey. With hockey they do not mean field hockey as in the Netherlands but ice hockey, which is a totally different sport. We went to a game of the Hamilton Bulldogs and it was one of the most specular things I have seen on my exchange so far. They hit each other whenever they can, start fights in the middle of the game and push each other against the glass walls. Unfortunately our team lost but it was still a great experience.

Holidays

In Canada there are a few holidays, which we do not celebrate in the Netherlands. One of them is thanksgiving. I always thought this was on the same day as the American thanksgiving but in Canada we already celebrate this one month earlier than the Americans. Canadians consider thanksgiving the most important holiday after Christmas and is celebrated by getting the whole family together and cooking a lot of food (usually turkey). Together with my roommates we spend the whole day cooking and in the evening we had our own thanksgiving dinner.

Two weeks after thanksgiving it was time for the student's favorite holiday, Halloween! You can compare Halloween with Dutch Carnaval and people take a serious effort to find or make an original outfit and decorate their house.

Other cities

Even though the country is the second largest country in the world, Ontario is really crowded and therefore easy to travel in. Hamilton, Toronto and Ottawa are all located within Ontario and two other cities, which are definitely worth visiting, Montreal and Quebec City, are located in the province Quebec. Canada is bilingual which means they have two official languages, English and French. In Quebec French is the official language and just as in France they prefer that no English is spoken in their province. Quebec feels a bit like Europe because of its French influences. When walking around Montreal you could easily picture this city situated somewhere in the north of France. Ottawa, the nation's capital, which is not Toronto as many think, is located just two hours from Montreal which makes it easy to visit when you are in Montreal.

When writing this I only have 3 weeks left in Hamilton and only 6 weeks until I will be back in the Netherlands again. Next week exams will start and it has just started snowing. My last weeks I will spend in the United States making a tour through the east coast visiting Washington DC, Philadelphia, Boston and New York City. After seeing the ball get dropped at Times Square on New Years Eve I will leave the States and fly back to Europe with an amazing time to look back at. •

Chocolate Adventures

Stan Albers

AGE: 22

Began studies in 2013

This year the Active Members' Day had been organized in the charming village named Oirschot. We gathered at Tilburg Station at twelve o'clock, where we were divided into four groups and we got a bag with lunch. After a quick trip to Oirschot by train or bus the first two groups were sent to `De Dames', a chocolate store, for an exciting chocolate workshop. The other two groups had the honor of beginning with a quest in Oirschot which contained several fun tasks. After two hours the groups switched between workshop and quest.

Since I had been selected in one of the first two groups, I started with the chocolate workshop. We were invited by the staff to enter the basement of the chocolate store where the workshop would take place. There were some workbenches and the groups divided themselves around these benches. The head chocolate maker of the store started explaining what we would make this day. He picked a coloring plate for a demonstration and with a chocolate nozzle he started putting lines of dark chocolate over the lines of the coloring plate. When he finished the lines he picked extra nozzles for white and milk chocolate and colored the planes between the lines with the three types of chocolate. After this he put the picture to rest under the workbench and started making little rounds of chocolate with the different nozzles as an extra task for us. Then he decorated the rounds with nuts, pieces of caramel and other delicious decorations.

After the demonstration we were eager to try for ourselves. After picking a coloring plate (there even was the choice of making the logo of our association) we quickly began with drawing on the coloring plate. I chose a picture of a 'Zwarte Piet' because now it is still possible. Who knows if it might be racist after a few years, right? It was clear that the head chocolate maker had done this over and over, because he was a lot quicker and better than us. But finally we managed to produce astonishing pictures and also the rounds were looking nice and decorated extensively. Now it remained to make a nice decorating for packing the chocolate. After another demonstration we used transparent foil and pieces of fabric for an optimal design!

Then it was time to get some fresh air outside. We began our quest through Oirschot armed with a piece of paper with tasks and questions that needed to be done and answered. To get a picture of the tasks we had to perform I will present some here. First, there were tasks that had a relation with Oirschot. For instance, we had to measure the volume of the smallest house in Oirschot but we also had to make a picture of us on a gigantic chair (it had something to do with the furniture plant in Oirschot). Other where more related to Asset I Econometrics. We had to name all the active members and we had to make 19 with four given numbers and +, -, *, /, (,), log and ^, a variant of the known 24-game. Besides that, we had to sing `Brabant' from Guus Meeuwis on a stairway and had to do an impression picture of a sheep and a dragon which could be found on bricks from the local church. Fun guaranteed!

We ended with dinner at Troje in Tilburg after a free drink in De Boekanier. Everybody ate their pizzas or spaghetti and we had a good laugh when Joep Thijssen got his pizza thirty minutes late and inedible. There also was an award for the group that had gathered the most points at the quest: ice cream dessert. After that, we went back home with our chocolate and some great memories! •

An International Multi-Talent

Most of you will know Jan Sprenger from his Philosophy of Science lectures, but as it turns out, there is quite some more about Jan than just his profession. Did you know for instance, that he did a BSc/ MSc in Mathematics, which he even finished with distinction. If you want to find out some more interesting facts about the life of this international multi-talent, then go ahead and read on!

Text by: Ennia Suijkerbuijk

Jan's Early Student Life

Jan Sprenger was born on the 1982 in Germany, where he grew up in the lovely city of Cologne (Keulen in Dutch). He started college in Bonn, where he began for a Diploma (equivalent to a master degree) in Mathematics. Jan remained to live in Cologne, for he says: "Bonn is not a particular exciting city. I see it more as a suburb of Cologne, since going out was much more interesting in Cologne than in Bonn."

He very much enjoyed his student time and study, even though back then, there were almost no study, sports or students associations. There did however exist 'Verbindungen' (fraternities), but Jan was no member of this. His free time he spent on playing the piano, which he calls "a great way to relax", on meeting up with friends, on reading, on going to concerts and in particular on playing chess. Chess has always been Jan's favorite hobby and he especially played often during his studies. Nowadays, he is even a so-called international master.

Jan Sprenger
Assistent Professor

Jan did not have any jobs during his studies, since he received some extra funding from a scholarship for talented students. He also never did any internships, for in those days, studying was quite different: "People just studied as long as they wanted, because there was no pressure. If you graduated at the age of 24, you were already considered to be young." This might partially be explained due to the fact that there was still conscription in those days. Hence, Jan spent one year at the sports division of the army, which he thinks was quite a funny experience. Jan: "I could play chess for most of the time, since apparently, chess is a sport."

A New Path

Jan felt like he knew where his path was going, until an old school friend of him took a minor in philosophy and Jan decided to take some classes with him. This was a real eye-opener for our devoted math-student. Jan suddenly realized that he had a big interest in the field of philosophy and seriously started to doubt his study choice. However, since he was already in his third year of the five-year program, he decided to first complete his mathematics studies. He even managed to do this with distinction. Next, to broaden his general knowledge of the world, Jan decided to do some travelling before he would continue with a PhD. So together with a good friend, he made a journey through Central Asia.

When he came back, he was positively sure he wanted to change discipline and so he started his doctorate in Philosophy. During his PhD, Jan also went abroad for a couple of months, visiting the London School of Economics and also to Tilburg University, where he already made some useful contacts.

The Right Decision

While finishing his studies, Jan applied for a job here at Tilburg University. He was lucky and got selected and did not feel the need to apply elsewhere. "I really wanted to work in Tilburg. First of all because my former boss in Tilburg was and still is working in my exact area of specialization. Second, because we also had a perfect personal relationship, so it was really a productive research collaboration. Besides that, the university had just set up a research center for philosophy. Cologne is also not that far away, so I can go back to Germany whenever I want." So Jan moved from his hometown Cologne to Tilburg, where he started working as an assistant professor and researcher.

Though it has only been a couple of years since he graduated, Jan definitely feels like he has made the right decision. Jan: "As a mathematician, you need to have a certain quality for approaching problems, that I personally do not have. As a friend of mine, who did a PhD in mathematics, once said: ‘It is like running against a door with your head and then the next day doing the same thing, even though it hurts, until the door breaks.’ That is the way of working mathematical problems: it is a history of failed attempts until you finally succeed. You need to have intrinsic motivation to accomplish this.

Weaknesses

So, to sum things up, Jan finished his Mathematics MSc, finished a PhD in Philosophy, is an international chess master, a traveler, professor and researcher, has his own Wikipedia-page and besides also finds time to play soccer at student sports association Merlijn. Obviously, we were eager to find out whether this multi-talent has any weaknesses as well. Jan honestly tells us that apart from improving his soccer skills, he feels that his teaching still needs some improvement: “When I started here, it was very tough for me. I did not speak any Dutch, even though I had to teach a lot of students in that language. I really had to learn to give lectures to a group of 200 or 300 students, since I had never done this before. It was a tough learning process.” However, at some point, Jan managed to do it in a pretty reasonable way, as he says himself, but still there are many things he thinks he might improve. For instance in how to keep students active, how to choose examples that match their interest, how to structure lectures, but also learn in what the right use of slides and movies is.

Life in the Netherlands as a German

Besides the difference in language, there are many more dissimilarities between the Netherlands and Germany. We asked Jan what he prefers about both countries and found a peculiar difference. Jan: “I very much appreciate the easygoing and genuinely open attitude in this country. This also facilitates my teaching to Dutch students, since my Dutch is good, but not comparable to a native speaker. I have barely encountered reservations or prejudices (certainly not in the younger generation) and I had an easy time integrating in the society. Whereas in Germany, you might stay a foreigner forever.” However, Jan also sees a downside to this quality: “I find it difficult to make really good friendships, so the kind of relations that endure over years, survive job changes, marriages, etc., and that are based on a kind of congeniality or kinship.” Jan feels like this is not only the case for him as a foreigner, but such friendships do not happen so often among Dutch people either.

Advice

When asked whether he has any advice for the EOR students, Jan tells us that he feels like students should keep an open horizon. “I know it is difficult, because of all the new and stricter laws, but it does add value to your life. Both now and in the future.” Things one might consider are doing a board year (in study or sports associations), peering into completely different subjects, going abroad, or doing something completely unrelated to your study or CV, just because it fascinates you. Jan himself feels like he has learned an incredible amount of things from all his activities, things that he probably never would have learned otherwise.

At the end of the interview, I feel like both my committee member Maha and I learned more about Jan’s study choices, even though we probably still will not make them ourselves. We do wish Jan Sprenger all the best with his career his at Tilburg University and we want to thank him for the refreshing interview. I can honestly say that I already look forward to having my first class from him. •

‘It is like running against a door with your head and then the next day doing the same thing, even though it hurts, until the door breaks’

Seven, it is your lucky number!

To celebrate her 35th anniversary Asset | Econometrics organizes a week of festivities in March 2014. These activities do not exist out of nothing though. Therefore, since March 2013, the Lustrum Committee has been busy organizing this amazing week.

Ashley Beringer
AGE: 20
Began studies in 2011

How do you start organizing an event which is only held once every five years? We had nothing to start from except from the fact that whatever we should do, it ought to be remembered for many years. Our first assignment: think of a theme for this Lustrum week. With seven people in the committee combined with the fact that it is our seventh lustrum, we chose the theme 'Lucky 7'.

Afterwards the second task came along: think of a program for the week. We had to ask ourselves how an optimal schedule would look. Therefore we had to think of possible schedules and weigh their up and downsides. It did not take us long to find the basis of the program. We have an opening, company day, beer cantus, members' day and a gala. Of course the exact completion of the activities had yet to be made. To divide the work we assigned two activities to every committee member. In that way everybody has a task which they like.

At the moment we can already give you much more information about the week itself. The evening of the Opening is filled with the presentation of the Almanac, a quiz and a wheel of fortune. For the Company Day we created a schedule in which the participants can have a delicious breakfast with the companies. The students can follow cases in the morning and an energetic activity with the companies is planned in the afternoon, namely fencing. After all these serious events the beer cantus is planned. Of course this includes some barrels of free beer and this will be organized in Café Hoegaarden. To check if our stomachs are still fine, we go play dodge ball on trampolines during the Members' Day. The week would not be a Lustrum week if it would not end legendary. Therefore on Saturday a Dinner and Gala takes places at the Philharmonie. During the evening a roulette and blackjack table are also present to express our theme 'Lucky 7'. A summary of the program can be found to the right.

By now we have come to the moment that the pressure is turned up a notch. There are a lot of things that are going on at the same time. For all days we have to think of activities and possible location. Also the external affairs are busy calling companies to give them more information.

When organizing such a week as a Lustrum week, activities are not the only things to arrange. Since the association is 35 years old for a whole year, the whole year should be a party! So at the beginning of the year it should be clear to everyone that this year is a special year. Therefore we announced the theme during a drink in the beginning of the academic year where we also had a surprise for all present students. The theme was announced by a creative movie in which all committee members played a role. But that was not the only surprise, for we also had a Lustrum Song!

There is so much information available during the year that a page on the normal Asset | Econometrics website would not be enough. Therefore, during the summer a new website was built, with a lay-out which matches the theme. If you are interested in the movie, the song, the program or anything else you can visit our website at www.Asset-Econometrics.nl/lustrum.

Lustrum Program

Tuesday	Opening
Wednesday	Company Day
Thursday	Beercantus & Party
Friday	Members' Day
Saturday	Dinner & Gala

If you want to know more about the people behind the scenes of the Lustrum week you should read the following part as well, where we introduce all of our committee members. I hope to see you all in March at one or (preferably) more activities!

Ashley Beringer
Chairman

I will try to tell you something you do not know of me yet. I collect all kinds of puzzles, from boxes which open in a secret way to different kinds of Rubik's Cubes. Even my little wallet for cards is secretly a puzzle. Furthermore, I have a thing for horror movies, there is nothing that can scare me (except spiders, but that is old news). I also have a personal conflict; cleaning is not one of my favorite things but a messy room can really annoy me. As a result I can start cleaning my room out of nowhere.

From left to right: Mitchell, Masum, Pieter-Jan, Janinke, Ashley, Annick and Anouk

Anouk Claassen

Treasurer and External Affairs

This year I get to spent a lot of time with Anouk, for we are both not only in this committee but also in the PR-committee of the sports association Chikara. I have noticed that Anouk is a very helpful person who takes up a task very easily. She is also very creative with the design programs but at the same time these programs are one of the very few things that can make her lose her calm. Besides her hard work she still manages to keep training for jiu jitsu, in which she currently holds the green belt.

Pieter-Jan van Kessel

Coordinator External Affairs

Tennis is the first word that comes up in my mind when I think of Pieter-Jan. He plays on a high level himself, but he also gives tennis lessons. Therefore, a lot of his free time he is busy with tennis. This makes it quite difficult to get in touch with him sometimes. When you can finally spend some time with him, however, I can guarantee you will have an amazing experience. Pierre-Jean has the gift to make incredible stories out of nothing. But watch out for this guy if you had a rough night, together with Masum their enthusiasm will exceed all boundaries.

Mitchell Dingemans

External Affairs

Mitchell would describe himself as lazy, he is even so lazy he only came up with two words when he was asked to describe himself with three. Apparently he is not so lazy at work because the Efteling is still hiring him. If time traveling was invented and he could ask his 40-year old self a question he would ask if he is still attractive. This act of vanity was also shown in making the Lustrum movie, because he insisted on doing his hair perfectly while it needed to be an out of bed look. Sorry female readers, this guy is already taken by a girl from the USA while he was at summer school.

Masum Rahman

Secretary

When looking for the hidden words in the minutes of Masum it is clear where his priorities lie; kebab. There is not a time or place where you would not make him happy with kebab. For this reason he dreams of having his own kebab holder with a man who prepares it for him when he gets home. He would finance this with the money he earns in his career in finance. According to Masum "you might as well go for the money, if you don't know what to do", because crying in a Ferrari is better than crying on a bicycle.

Annick van Ool

Committee Member

Although she is a board member now, she was already in the Lustrum committee from the start. Back then she was the treasurer of the committee, and now she is the treasurer of the whole association. On our weekly meetings on Friday she has to leave on time, so she can go to the Harmonie, where she plays the clarinet. Although the Harmonie is in Limburg, she tried to miss as little rehearsals as possible for all the years she has been living in Tilburg.

P.S. Do not look up weird when you catch her smelling new books.

Janinke Tol(lywops)

Coordinator

Actually, she is lying about this, her real name is Janneke Ineke Tol. A long time ago, four and a half years to be precise, a girl from far far away found her way to Tilburg. I am not saying from where exactly, because it is always mentioned when she is introduced, so you probably all already know. She played volleyball at Gepidae, but she also likes horseback riding, ice skating… Actually, sports in general. •

Keep Your Eye on the Ball!

November 11 was a historical day. After months of preparation, the new-born Sports Committee managed to gather lots of sporty (and slightly less sporty) students for their very first activity.

Bart Ruigrok
AGE: 21
Began studies in 2012

We all met in Sports Hall 2, where the committee split us up in six smaller groups of 5 or 6 students. In the first hour, the program existed of three different games.

We started off with two double badminton matches. Having some prior tennis experience did not seem to help much, as Janinke and I quickly fell behind by quite some points. Willem blew the whistle: we had to swap opponents. Apparently our teammates were not doing so well either. We continued counting from their current score: 14-25, which did not look promising at all. However, point after point, Janinke and I started getting the hang of it. Seconds before the final signal we scored 30-30! Match point. We won! (Well, at least one of the two matches.)

On to the floor hockey game; our first chance to play with our team as a whole. This was definitely the most exhausting game of the afternoon. We ran back and forth and had some excellent team play. I feel sorry to say, but our opponents did not stand a chance. We scored 7 goals, bringing the final score to 6-1.

Table tennis was the third game to be played. We faced some strong competition. The other team had not lost a single game so far. I will spare you the details, but I believe we won one of the two games.

Afterwards, it was time for a small break. The committee surely took good care of us. They provided sport drinks, bananas and, of course, chocolate... Meanwhile, they prepared the setup for a game we all used to play in primary or secondary school: dodge ball. Nostalgic feelings arose. There are dozens of variations on this game. It took a few matches in order to figure out which one worked best for us. The groups merged so that everyone was able to spend as much time playing as possible.

Although I am sure no one would have had any problems with playing dodge ball for another couple of hours, we had to continue with the very last game of the day. It was a relay race, played by the original six groups. One can easily say it was a rather non-typical relay race. First of all, there was some hopping on a single leg before spinning around a cone for 10 times. While being a tad dizzy, you had to try and hit two bottles with a tennis ball, that was put in a pantyhose, you had to wear on your head... Finally, you quickly had to hand over a coaster (Dutch: viltje) you were holding in your mouth using a clothes peg (Dutch: wasknijper). The pantyhose part clearly proved to make or break it for most teams. While some managed to knock the bottles over virtually immediately, others spent what seemed to be over a minute before succeeding.

All in all, the sports activity was a big success! Besides providing you with a dose of physical exercise, it is also a superb way of getting to know some of your fellow students better, outside the university environment. I even spoke with some fellow students who would love to join such an activity once every week! Not bad for a debuting committee, I truly enjoyed it! •

Tess Beukers
AGE: 24
Former Active Member

A Fishy Dinner

Saturday the second of November a small group gathered at the Aphroditestraat in the Reeshof, Tilburg, to participate in this times former active members' activity: a sushi workshop. We were expected to be at the location around six o'clock in the evening, after which the cooking could almost commence.

First we got a brief explanation about sushi. During the explanation I learned that it actually takes at least ten years before you master the art of sushi making. We also learned a bit about the history of sushi and how sushi rice is prepared. After this enlightening story, we could start chopping of fish heads, slicing vegetables and making the rice as sticky as possible.

After the slicing and chopping, the table contained several bowls with cucumber, mango, salmon, mackerel, eggplant, some type of sour vegetable, rice, seaweed and other things. Now we could start preparing the sushi, first up was Maki. This is the type of sushi with the seaweed on the outside and the rice and 'goodies' squashed inside. The tools we needed to prepare the sushi were a bamboo type placemat that is not a placemat, a bowl with water and our hands. I still hope everyone washed their hands that evening. In theory making sushi goes in the following way: place a slice of seaweed on the bamboo placemat; dip your hands in the water bowl; cover the seaweed with rice; place some fish/fruit/vegetables on the rice and role the sushi using the placemat with a swift movement of the fingers combined with the right amount of pressure into a role with a diameter of three centimeters. Got it? In practice it went quite well, although a few placemats got stuck in the sushi roles because some people were a bit too enthusiastic.

Next up was Ukimaki, which is more or less the same as Maki, except now the rice is on the outside and the seaweed on the inside. A nice touch is that you can decorate these sushi roles with colored sesame-seeds. The best way was obviously to use all three colors, which gave the sushi roles just that little extra touch. The main difficulty when preparing the sushi roles was the really sticky rice. You could nibble a small meal from your hands after each sushi role. Thankfully most people where decent enough to use soap and water instead of their mouth to remove the rice from their hands. The last type of sushi we made was Nigiri. This is basically a vegetable or piece of fish glued to a lump or ball or square (depends on how you like it) of rice. The glue we used was wasabi, which is of course known for its spicy taste.

By the time we had almost finished cooking, I was really hungry, so I have to admit that not all sushi made it to the dinner table. However, the sushi that did make it to the dinner table was nicely served on large plates. These plates also carried seaweed free sushi for those who dislike seaweed and vegetarian sushi for those who dislike dead animal of any kind in their dish. Unfortunately there were no chopsticks to eat the sushi with, but a fork will do just as good and I really enjoyed the sushi. But what really made this evening a success was the nice company of the other (candidate) former active members and the board. If it was not for them, the dinner chat would not have gone from current occupations to tigers and bare chests. •

Eating and Cycling
Through the City

The cycling dinner was a great opportunity to reveal your hidden master chef and discover new taste possibilities. Not only was the food great, it was especially nice to get to know so many people better and to hear all kinds of stories. Where else would you be able to play eatable "Mikado", eat soup out of a Halloween pumpkin, have a romantic desert with six(!) people and hear the story about the little Mexican still in the closet?

Kristel van de Riet
AGE: 19
Began studies in 2012

What is a cycling dinner?

For those who do not know what a cycling dinner is: a cycling dinner is a dinner consisting of multiple courses. Every course is eaten at a different location with a different group of people. This time, you could subscribe in pairs. Each pair was assigned to a different group (consisting of six persons, so 3 pairs) for each course. In every group one pair was assigned to make the course, so the course would take place at the house of one of the two people of the cooking pair. Every pair prepared one course in total and ate the other courses prepared by other pairs. In total there were 3 courses with different themes: a funny starter, a sexy main course and a romantic dessert. Afterwards we had drinks and the winning pair of each course was announced. Enough reason to show your creativity!

My cooking experience

Together with Roxanne I made a dessert. This was very hard, since we have opposite preferences and we did not own a mixer. After a long discussion we had rejected every recipe we could find, so we had to invent a new romantic dessert ourselves and we succeeded! We made a dessert containing of 3 sub-desserts and some decorations. The sub-desserts were: mango sorbet ice with pomegranate, vanilla ice cream with raspberries and strawberries and a mixture of MonChou, whipped cream and sugar alternated with cherry sauce served in a long chic glass. As decorations we had heart shaped strawberries and flower-shaped marzipan. After stirring the MonChou in turn with just a spoon and shaping the marzipan, we completed our dessert which we could then proudly present to our guests.

And the winner is...!

After the cycling dinner, the winners were announced by the D&A committee.
And the winners of the best...

- ...funny starter was the pair Esmee & Rowie with their wraps shaped as caterpillars!

- ...sexy main course was the pair Charlotte & Belle with their lust stimulating course which contained among other things apricots, figs, meatballs, honey dressing, Goji berries and nuts!

- ...romantic dessert was the pair Tom & Eline with their candle lightened chocolate mousse with hart shaped spice nuts!

As a reward, they got a cookery book and more importantly: everlasting glory!

Losers Became Winners in the End!

On the 7th of November we, as first year econometrics students, could participate in the freshmen activity. This activity involved a dinner at cafe Studio and afterwards we went to play pool.

Beforehand we had indicated what we wanted to eat. We had three options: salmon pasta, chicken saté or vegetarian pasta. That evening we gathered at cafe Studio. After letting the committee know we were there, we could go upstairs to join the rest of the people who were already there. Upstairs we sat down at the first table with free chairs, and we got to know some new people. During the dinner a lot of jokes were made and Amber from the freshmen committee explained the rules of the pooling game.

Then the teams were distributed over the tables again. If you had won the first game, you had to play against another team who won the first game and if you had lost the first game you had to play against another team which lost the first game. In this way you would have to play against a team with the same level as you at the end of the evening. Also, on the first table there was a winner's match during the last round and on the last table a loser's match.

Anouk Verhagen
AGE: 18
Began studies in 2013

'The award went to the team which had lost all the rounds'

After we finished the dinner we went to the pooling center by bicycle. During the dinner we had to make a team of two people to play pool and we got a number. The numbers were distributed in such a way that we would not have to play against the people who enjoyed their dinner at the same table. The teams were divided among the pooling tables and then we got three coins so we could get ourselves something to drink during the game. During the first game it was very easy to see which people had played pool before this evening and which people had no experience in pooling at all. In the beginning it was very difficult to hold the cue correctly but at the end of the evening this got easier.

After we finished the first round we had to report which team had won the game. Despite the fact that Amber of the Freshmen committee explained the rules during the dinner, everyone had their own set of rules. This made it was a little bit confusing sometimes, but we had a lot of fun during the games anyway. After we played four rounds there was a little award ceremony. Everyone thought that the team who won after all rounds would get the award but this was not the case at all. In fact the award went to the team who had lost all the rounds. Because I lost all the games, my teammate and I got a film voucher so we could work on our collaboration. So losing all the rounds was not that bad after all.

After the pooling we went to Café de Boekanier for a last drink together. The first drink in De Boekanier was for free. Unfortunately, after that drink a lot of people went home. That was a pity because it was still a little empty in De Boekanier, since it was very early for a night out. A few drinks later we decided to go home as well. Overall it was a very nice and enjoyable activity. We got to know our fellow study mates a little bit better in a different environment than in the lecture halls. I am already looking forward to the next activity. •

THE PASSION OF...
SASKIA RIDDERSMA

Horseback Riding:
Solving Another Puzzle Everyday

For this edition of the passion of we decided to interview Saskia Riddersma, a true lover of horseback riding. Not only does she practice this with great passion, she is actually pretty good at it as well. Although some might consider the amount of time and regularity this hobby requires as a major drawback, she does not seem to mind it as much. And if this is not enough of a time sink she is also in the board of the student horseback riding association!

Text by: Jelle de Rooij

Saskia Riddersma

AGE: 20

Began studies in 2011

How it all Started

Saskia is part of a very sportive family and she played a lot of sports when she was little. When she was ten years old, she stopped with judo because she thought it got a little bit boring after a while. Her brother is still playing judo at a high level though. She also played some other sports, since practicing sports is in her blood, but she did not like these sports longer than a couple of years. Saskia feels that any sport feels the same after you have practiced it for a while. She wanted to do something completely different and so when she discovered horseback riding, she had found her sport. This did not get boring after a while, for it is like solving another puzzle every day. Nowadays Saskia has her own horse and sometimes she also teaches other people how to ride horse. Besides that, she also tames horses.

Ceasar

After Saskia had ridden horseback for a while, she knew she definitely liked the sport and so she bought a horse. Finding a good horse, however, is not as easy as it sounds. As it happens, Saskia's mentor from her first year of high school had horses. Now you might think that this solved the problem, but then the mentor's daughter found a horse on a website. Despite the fact that the advertisement itself did not look that good, and was perhaps even a little strange, Saskia still went to look at the horse. When she got there and she met Ceasar, they immediately liked each other. Needless to say she took him home and now Saskia sees Ceasar every day. Of course this is partially because she has to; she has to take care of Ceasar, for instance feeding him and riding him as well. Her horse is stabled near Tilburg so that she can go there every day. When we ask Saskia to describe Ceasar, she calls him a "stresskip", but she instantly said that he can be relaxed too.

Competitions

Saskia does not only ride for fun, but she also participates in competitions. She often rides dressage, but sometimes they also do jumping. She does not do both, because then you will have a competition every weekend and subsequently, you do not have any time to practice any more. At the moment she does not compete in any competitions. The level Saskia is riding at is already quite high, but participating on a higher level would make it become too difficult for her pony. She likes both dressage and jumping, but she does dressage the most, since she is better at it. With dressage you have different levels, the lowest is B (Beginners), after which you have "licht", "midden", and "zwaar". The level one step higher than "zwaar" is "ZZ-licht" and then you have "ZZ-zwaar". There are in fact higher levels, but those are international. Saskia herself rides in the level "ZZ-licht", which is the sub-top level. There are competitions every weekend near Tilburg, but the most competitions are only for the level "zwaar", so Saskia usually has to drive for an hour to a competition.

Zeeland

Saskia originally comes from Middelburg and is in fact still a member of a club in Zeeland. However, this is not the type of association you might expect. She is a member of this association so she gets a starter pass, since you need one of these to be allowed to ride in competition. However, because she is a member of this club in Zeeland, she has to compete at the championship of Zeeland. She did really well in this, four times she placed runner up and one time she won and was the champion of Zeeland. As the champion of Zeeland you ride against the champions from all other provinces of the Netherlands in the Dutch championships.

What does a competition look like?

An actual competition is very short, and lasts for about five minutes. Nevertheless, when competing, you are busy all day long. This is because of all the other things involved. First, you have to brush your horse and then you have to braid him. After you have done this, you can participate in the competition, which means that you have to get your horse in the trailer and then drive for an hour on average to the place where the competition takes place. On arrival, you have to saddle your horse, so that you can actually ride. After you are finished with your dressage, you have to wait for the awards and at the very end of it, you can go home. When you are home, you have to take care of your horse again, by brushing and feeding. After all this, your day is finally over.

Student Sports Association

Saskia is not only a member of the student association for horseback riding in Tilburg, but she is also in the board of this association. She is the secretary and has contact with all new members to make them enthusiastic. With this association, she travels the whole country to ride against other student

associations. For example, on the 2nd and 3rd of November, 2013, they went to Amsterdam. A competition like this takes the entire weekend. Besides participating in tournaments, she

‘She instantly said that he can be relaxed too’

sometimes also gives lessons to the other members of her association.

Time

It might have become clear that horseback riding takes up a lot of time. Then how can Saskia combine it with a difficult study like econometrics? “Do not have leisure” was her answer. At the moment, she rides on two horses a day. This takes about three to four hours. Besides her passion, she also has to study and she does a board year, but somehow she manages to still make time for her friends. To be able to combine all of this, she does not sleep that much and she cannot do everything she wants: “It is all about making choices; sometimes

I spend more time on one thing and then some more on the other things.” Since she has the responsibility to take care of her horse every day, she has learned to plan very well. There are some other abilities that are useful as well, which you develop when practicing horseback riding. Saskia thinks being extraordinarily consequent is one of them and also learning to communicate well. The latter because you have to communicate with your horse really well; you have to show that you are the boss, instead of the horse.

Idol

When I asked Saskia whether she has an idol, Saskia said no: “Having an idol sounds like I am a Penny-girl.” (For those of you not aware, ‘Penny’ is a horse magazine for children). However, she does follow equestrian. Even though Saskia does not have an idol, she does think that there are some people who are extremely good at horseback riding, for example Edward Gal. But in this sport, it is not only about the rider, for of course it also depends on the horse. Edward rode on Totilas (which he sold for 10 million euros) and together they won many prices. However, when Edward got another horse, nobody heard from him for quite some time. —›

Support
Saskia receives a lot of support from her environment. Her parents help financially, because having a horse is rather expensive. For instance, you have to pay for stabling, food, the dentist, etc. Besides the financial help, Saskia's parents also bring her to competitions. Friends sometimes think that her passion might be somewhat impractical, since you can hardly go away for an entire day. However, Saskia found a way to fit things like that into her schedule as well.

'She cannot do everything she wants: it is all about making choices'

Nice Experiences
The previous championship of Zeeland, Saskia rode in the Z2 class (Zwaar 2). Saskia aimed to place second, because there was a girl with a very good horse that could ride pretty well too, so she felt that winning was not feasible. She had her first official dressage on music (freestyle). After the first round, she came in third and in the end she indeed ended second. She even beat a girl who rode on an international level. The competition was great, but the way home was not, since it was February and it had snowed. This meant she only got home at 2 a.m. Of course, this is not such a nice ending to what was in fact a satisfactory day. Something else she gets a lot of satisfaction from is when other people ask her whether she wants to ride their horse. Especially when it does not listen to them, but that does listen to her.

Horseback Riding
Saskia would like to recommend everybody to go horseback riding as well. If you feel like this is not really your thing, you should still give it a try, for it is very different from what you might expect. If you want to ride, come to Cave ne Cadas, which is the student horseback riding association. Riding is truly a lot of fun and it is great to have a relationship with an animal that listens to you, while he is in fact much stronger than you are. •

Partying in Style

Mitchell Dingemans

AGE: 21

Began studies in 2010

At the end of November the Asset Gala took place. A great opportunity to see friends getting all dressed up, to have a drink with them and to meet some new people!

For me, as always, getting there and not forgetting anything was quite a challenge. As I went to catch the bus that Anouk and Jeroen were taking I noticed that I actually had managed to forget my smoking. When I went back to my appartement to get it I knew that I had missed the bus. Luckily Willem and Suzanne were taking the next bus and I could travel with them.

When we arrived there was a large queue before the cloakroom. Though, as some of you know, Willem is quite the entertainment, so it seemed like we were at the front of the queue in no time. As we entered a large room a band was already playing and we were offered a glass of champagne.

Still standing with a full glass of champagne in my hand Martijn already offered me some schrobelèr and I thought at this rate of drinking the night probably would not end that well and I would not have been able to write this article. Luckily the queue at the bar soon began to form serious competition to the queue at the cloakroom and getting drinks was not that easy anymore.

There were two photographers that were taking pictures of groups and couples. At the start of the evening people were mostly taking pictures, socializing with friends and checking out how nice everybody looked. As time passed people started to move towards the other end of the room where the band was playing and started to utilize the dancefloor. Around midnight the band stopped playing and a DJ started to spin the wheels of steel. For me this was a welcome change as I am a big fan of dance music even though it does not fit the classy gala style.

Before I knew it the night was already coming to its end and after the last track had finished the lights were turned on. I guess time really does go fast when you are having fun. On the way back we took a taxi with five people, which was no problem said the taxi driver, and I started to think about how this experience is going to help us with the organization of the Lustrum gala. I am already looking forward to it!

LIVING IN LODGES

The Seeming Nightmare

Text by: Mike Weltevrede

Imagine lying on a beach. The sun is shining, it is a comfortable 32 degrees Celsius, a puff of wind passes your body. Now imagine that you can experience this feeling almost every single day. Do you have the image and feeling in mind? Good. Now imagine having to depart for a cold and rainy country. The temperatures generally do not rise above twenty degrees Celsius and can drop below zero at times too. Moreover, it rains often, not to mention the heavy gusts of wind that torment the inhabitants every now and then. This seeming nightmare is one that Ginonne Michelle Severina had to go through. She came from the lovely warm island of Sint Maarten in the Caribbean all the way over here to the cold "frog country", also known as the Netherlands.

Ginonne Michelle Severina

AGE: 18

Began studies in 2012

Ennia and myself went to visit Michelle at Talent Square, a new complex in the city centre of Tilburg. In fact, I live there too. I certainly enjoy living there, but does Michelle too? She says that she does indeed like living at Talent Square. She lives in lodges together with four other people. They share a kitchen and a living room, but all of them also have their own room with their own bathroom. "This is a huge advantage over other lodges", says Michelle. I am sure that almost everyone reading this article will agree with her that having your own bathroom is certainly a nice thing.

As we approached Michelle's room, the smell of food already reached our noses. Overwhelmed by an irresistible scent we rang the doorbell and we were greeted friendly by Michelle. We stepped into the living room slash kitchen slash hallway and I could not resist looking at the furnace to see what Michelle was cooking. My eyes immediately detected the seemingly delicious chicken that was still brazing on the stove, arguably the best kind of meat, besides beef obviously. I also spotted a small pan filled with all kinds of vegetables: cauliflower, carrots, broccoli and more. As a finishing touch Michelle added a dash of tomato sauce to the chicken and let it cook a little more. While the food was still cooking we decided to already ask Michelle a few questions, as it was quite difficult to quell our thirst for information. It is not every day that you get the chance to talk with someone from an exotic and faraway place like Sint Maarten.

Michelle, you are now living in the Netherlands. People are always quite negative about the weather and such, what do you think?

"Well, I had already been to the Netherlands before coming to live here. It was indeed cold here, but I just put up with it because I would mostly only be staying for a week or so. In Sint Maarten the temperatures lie around thirty degrees Celsius all year round. I certainly do not enjoy the cold for a long period of time, like right now. I do not think that it will be easy enduring these temperatures during winter, but I will try to get through."

Despite the weather, do you like living in the Netherlands and in specific in Tilburg? Can you tell us about how you like living at Talent Square and how you stumbled upon this room?

"I found out about Talent Square via Facebook. The university is working together with SSH, the host of the building, and they proposed this new complex to me. I really like living at Talent Square too. I am sharing this living room and the kitchen with four other people but I have my own bathroom, which is just fantastic! Despite sharing our living room and kitchen, we almost never eat together. The others are gone a lot or eat at different times than I do. Even though I am enjoying my room, I would have preferred to have a studio, so I am trying to get one for next year because I will have to leave this room at the end of this school year."

After asking these questions and receiving answers, dinner was ready. As it was put on the table, the smell of spiced chicken reached my nose and I could not help but almost drool. It smelled so good and luckily it also tasted like that. During this delicious meal we asked Michelle to tell us about her life on Sint Maarten; about her family, the customs of the people there, what she misses and what she absolutely does not miss. She tells us that she lived with her mother, who is also the person that she misses the most. They use Whatsapp to talk daily and sometimes they also use Skype. Michelle has an older sister too but she lives on Aruba. She also tells us

that Sint Maarten is divided up into a French side and a Dutch side. We get to know that Sint Maarten is basically the complete opposite of the Netherlands. Sint Maarten obviously differs from the Netherlands with regards to the weather but the Netherlands have more nature. The nature on Sint Maarten is really beautiful according What she really likes about the Netherlands is all of the colorful leaves lying around in autumn. Michelle tells us about a Sint Maarten specialty, Johnny Cake, which she misses a lot. She also tells us that she misses the fried fish from Saint Martin (the French side of the island).

Now we know what you miss from Sint Maarten, but what do you really miss in your room?

''You offered me a television once, but unfortunately I could not take it because the only antenna-port in the apartment is in the main living room and my room is too far away to let a cable run to my room. I would really like a television in my room, I really miss it. One thing that I would also like is a bigger refrigerator. We only have two small fridges with tiny freezers in them, and that is for five people; there is not enough space, in my opinion.''

What about visiting your mother and friends back on Sint Maarten, do you have plans to do that?

''I would love to visit them but unfortunately I cannot in the near future. I might visit them in the summer holiday but I cannot go in the Christmas holiday, it is just very expensive to go there; I need to save up some money first.''

Michelle's studies are going quite well. However, we were still wondering what she would do if she would not get a positive BSA. She tells us that it is unlikely that she would go back to Sint Maarten. She would probably study Applied Mathematics somewhere in the Netherlands.

As a last question, what are some of the most striking differences between Dutch people and those from Sint Maarten?

''First of all, I do not want to speak bad of either the Dutch or the inhabitants of Sint Maarten. What strikes me most is that Dutch people are a lot more polite. They are very nice about everything. However, they are careful with saying "good morning" or "hello". In Sint Maarten you will be looked at as if you are crazy if you do not say hello when entering a room or a shop.''

So, is this truly a nightmare for Michelle? Despite the very low temperatures Michelle says that it is definitely not. Why would she go and live here if she would not like it here? Michelle definitely enjoys her stay here and we hope that it will remain to be a pleasant stay in the "frog country".

We would like to thank Michelle for the interview, the hospitality and of course the delicious dinner. It is almost impossible for me to write about the food without drooling again. It was a great experience to interview someone from such an exotic place. •

Saint Nicholas' Poem

Saint Nicholas is only in the Netherlands for three weeks a year. During these weeks he always has time to visit a drink organized by Asset | Econometrics. Some econometricians receive a present combined with a poem especially for them. Saint Nicholas himself has written a poem about this great drink. **Text by: Jeroen Pars**

Dear Econometricians,

Asset | Econometrics organized an evening dedicated to me,
So that was where I wanted to be.
Now in this poem I would like to write,
What has happened on that special night.

Every year I bring Asset | Econometrics a present or two,
But the participating students do not know for who.
Some of the attendees did not even want a present,
For what I bring is not always pleasant.
You do not know what the wrap paper is concealing,
And some of the poems might be too revealing.
But do not be afraid when I call your name,
For just embarrassing you is never my aim.

Floris was my very first victim,
For two cocktails were too much for him.
Mitchell who had received some old bread,
Learned that feeding goats on a first date is a bit sad.
Then Bjorn was the next one to receive a gift,
Because he had been so drunk that he needed a lift.

You will never see Cleo and Esmee apart,
So they each got the other half of a friendship heart.
Then came the sad Joep, who had got nothing to eat,
Luckily he cheered up when he unwrapped his pizza sweet.

Willem must be glad his poem has been heard,
For he will now have less trouble finding his love bird.
The last to sit down was Pepijn from the D&A,
Who makes jokes and always has too much to say.
With my last gift came a cheer,
For it was a free barrel of beer.

After all my gifts were handed out,
I stayed to enjoy the crowd.
It is a shame though I could not stay for long,
For in the distance others were singing a Saint Nicholas song.
This unfortunately made me remember,
That I had to visit others before the sixth of December.
Leaving my favorite drink was a pity,
For this I would like to thank the D&A committee.

Best regards, Saint Nicholas

PUZZLE

Can you not decide whether you should simply enjoy the Christmas holidays or study for your exams? We have got a solution for you! In this new edition of Nekst we again provide you with a puzzle, a nice combination of relaxing and using your brain. So grab a pen and some paper and enjoy!

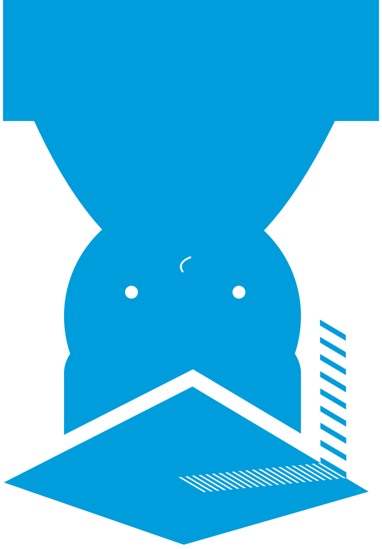
In a local village a big lottery will be organized. This lottery will last for 10 days, with prizes getting bigger as the days turn by. All participants have to predict in which order a certain amount of colored balls will be taken out of a vase. On the first day the vase will only contain two different balls. On the second day, however, it will contain three balls. Each day the number of balls will keep increasing by one, until on the tenth day the vase will contain eleven differently colored balls.

If you predict the order in which the balls are taken out of the vase completely correct on a given day, you will receive an amount of bars of gold equal to the number of that day. For example, if you predict the order correctly on day four, you will receive four bars of gold. Also note that the lottery is free to enter, i.e., there is no participation fee.

A local mathematician also hears of this lottery and one thing strikes him as odd: "The expected amount of gold bars can be written by using only four ones and some mathematical operators." Can you reconstruct how he did this?

Please send your solution to Nekst@Asset-Econometrics.nl before the 7th of March. A crate of beer or a delicious pie, whichever the winner prefers, will be waiting for whoever has the best (partial) solution. Please note that as before, every recipient of this magazine is eligible to send in their solution, so members of the department are invited to participate as well. Good luck!

Wouter Bieze is the winner of the previous puzzle. As a reward, he can come and pick up a crate of beer or a pie at room E1.10. The solution of the previous puzzle was **20**.



Asset | Econometrics congratulates...

Name: Pinelopi Christoforatou
Title: Taming uncertainty: Decision analysis in global supply chain design of Boon Edam
Supervisors: Prof.dr.ir. H.A. Fleuren, Dr.ir. J. Ashayeri

Name: Dimphy Hermans
Title: Replication of a Class of Variable Annuities for the Purpose of Economic Capital Calculations
Supervisors: Dr. R. van den Akker, Dr. F.C. Drost

Name: Eva Christopoulou
Title: Decision analysis for carrousel consultation in a Dutch outpatient clinic
Supervisors: Dr. K.J.M. Huisman, Dr. J.P.C. Blanc

Name: Iris Swaans
Title: Inventory Management and Warehouse Design at Insulation Solutions
Supervisors: Dr.ir. J. Ashayeri, Prof.dr.ir. H.A. Fleuren

Name: Heidi Veugen
Title: Crew Rostering at NS Hispeed
Supervisors: Dr.ir.ing. M.J.P. Peeters, Prof.dr.ir. W.H. Haemers

Name: Robbert van Oosten
Title: Call-in Order Timing in Gas Industry
Supervisors: Dr. J. Vera, Prof.dr. G. Kant

Name: Anna-Maria Zografo
Title: Applications of Real Option Theory under Investment Uncertainty
Supervisors: Prof.dr. P.M. Kort, Dr. K.J.M. Huisman

Name: Bart Kruize
Title: Dutch Sponsor Support and the Holistic Balance Sheet Framework for IORPs: an Analysis of Two Cases
Supervisors: Prof.dr. J.M. Schumacher, Dr. F.C. Drost

Name: Leon de Wit
Title: Approaches to solve DAG scheduling on homogeneous processors
Supervisors: Dr. R. Sotirov, Dr. J. Vera

Name: Stephanie van Breda
Title: Hedging separate accounts using hybrid options
Supervisors: Dr. R. van den Akker, Dr. R.J. Mahieu

Name: Lars Koopmans
Title: Impact of Modeling Assumptions on the Holistic Balance Sheet
Supervisors: Prof.dr. J.M. Schumacher, Prof.Dr. B.J.M. Werker

Name: Koen Füssenich
Title: Estimating costs of the specialist-medical care in the Netherlands: Using known fractions
Supervisors: Dr. M. Salm, Prof.dr. A.H.O. van Soest

Name: Jasper Koops
Title: The impact of illiquidity on the capital requirements of insurers facing long-term liabilities in a risk-based environment
Supervisors: Prof.Dr. B.J.M. Werker, Prof.dr. J.M. Schumacher

Name: Vincent van den Boogaart
Title: Case study for implementing RFID in the keg pool of Bavaria N.V.
Supervisors: Dr. J.P.C. Blanc, Dr. K.J.M. Huisman

Name: Joost Peels
Title: Strategic Investment In a Duopoly Subject to an Uncertain Economic Environment
Supervisors: Prof.dr. P.M. Kort, Dr. K.J.M. Huisman

Name: Emiel Veersma
Title: Analysing and Improving Logistics through Quantitative Research: A Case Study of the World Food Programme Logistics Department in Ethiopia
Supervisors: Prof.dr.ir. H.A. Fleuren, Drs. J.J.M. Braat

Name: Reinhard Schiel
Title: Selective Abortions
Supervisors: Prof.dr. A.H.O. van Soest, Dr. M. Salm

Name: Nienke Vugts
Title: Access Time Reduction by Simulation
Supervisors: Dr. K.J.M. Huisman, Dr. J.P.C. Blanc

Name: Nota Alessandro
Title: Can Our Grandpa Lead Us To Doom? A theoretical and empirical research on the effect of ageing on financial markets
Supervisors: Prof.dr. B. Melenberg, Dr. S.J. Sender

Name: Victor Nguyen
Title: Lapse Risk Lapse Rate Modeling
Supervisors: Dr. G. Nieuwenhuis, Dr. F.C. Drost

Name: Nicole de Lugt
Title: Delay Management Improving Rules-of-Thumb Concerning Wait-Depart Decisions
Supervisors: Prof.dr.ir. W.H. Haemers, Dr. R.C.M. Brekelmans

...on obtaining their Master’s degree.

Quatsch!

Willem Jongen: 'Ik ben een beest in alles wat ik doe.'

Roxanne Beerkens vertelt dat we met de bus naar de bestemming van de lustrumreis zullen gaan. Daniëlle van Dalen: 'Oh dan gaan we in ieder geval niet naar Wenen, want je kunt niet met de bus naar Zweden.'

Cas Luijten zegt: 'Kijk, deze foto is van dinsdag.' Daniëlle van Dalen: 'Ja, maar toen was ik niet dronken, toen was ik gewoon lelijk.'

Kristel van de Riet: 'Wat een mooie meeneempiano!'

Corné Ruwaard: 'Cas denkt in wegwerpartikelen.'

Pepijn van den Brink wil tijdens de 'Kolonisten van Tilburg' een steen handelen met Lotte Ruwaard. Pepijn: 'Lotte, draag jij ook je steentje bij?'

Anouk Claassen: 'Nee, Willem zou nooit zijn eten met iemand delen.' Floris van Loo: 'Inderdaad, hij deelt nog liever zijn vriendin!'

Sofia (Italian exchange student) to Johan Bonekamp when she sees 'pepernoten': 'What are the small round biscuits? They look like dog food!'

Quatsch?

Over the past few months, the editorial staff of Nekst received many quotes that relate to the study of Econometrics and to the activities organized by Asset | Econometrics. Therefore, we present to you a selection of some striking and funny quotes! Please mail all remarkable quotes you have heard to Nekst@Asset-Econometrics.nl!

Agenda
Winter 2013

Department Members' Meeting and Drink
January 21

After the last exams, when the first semester is really over, it is time to make up the balance. This is the moment to look back to the activities we enjoyed together and to look forward to what is yet to come. We will finish the night with a great drink organized by the D&A committee.

Active Members' Meeting
January 28

On this evening we want to give our active members the opportunity to give their opinion on our association. We will discuss some specific topics in three rounds and we will end with an open round without a specified topic during which all active members can provide the board with ideas. During each round the attending active members will discuss the topic in groups. We are looking forward to hear your interesting ideas!

Lustrum Trip
January 31 – February 2

At the end of January we will visit the beautiful city of Hamburg together with 35 members. This unique trip will be held to make our Lustrum year even more special.

COdE Beer Cantus
February 6

Together with the other Asset departments, MAK and De Smeetskring we will again have a great night of singing and drinking beer. So make sure you buy a ticket in time and sing with us.

National Econometrician's Day
February 11

The biggest career event of the year, the National Econometricians' Day (LED), will be organized by our sister association VESTING this year. The LED will take place in NBC Congress Center in Nieuwegein, near Utrecht. During the day students will get the opportunity to see many different companies during cases and a recruitment dinner.

Sport Activity
Date unknown

In February the second Sport activity will take place. Past fall we had a great afternoon together during which we played unihockey, badminton, table tennis and dodge ball. The upcoming activity will remain secret and we will announce the date soon!

General Members' Meeting
February 12

During the General Members' Meeting of Asset, you will get the half yearly update of Asset.

Après Ski Drink
February 19

In Café de Boekanier we will hold the traditional Après Ski Drink. During this evening you will be able to buy a beautiful beer mug. So wear your best Bavarian outfit and enjoy this great night out together with us!

Freshmen Activity
February 25

This second freshmen activity is open for second year students as well. So this is the ideal moment for all students of the first and second year students to get to know each other. Activities of former years were ice skating, street golf and laser gaming.

Pre-Carnaval Party
February 27

To celebrate the start of Carnaval, we will all dress up for a fantastic volleyball tournament. In this case participation is more important than winning. So wear your best carnaval outfit and play sports with us together. Do not forget to visit the party afterwards in Café Boekanier as well.

Faculty Wide Drink
March 12

Another great evening out with all our friends of Asset in Café de Boekanier.

Lustrum Week
March 18 – March 22

For the program of our exciting Lustrum week view page 40

ROSES
FOR
CHILDREN

LED