nekst

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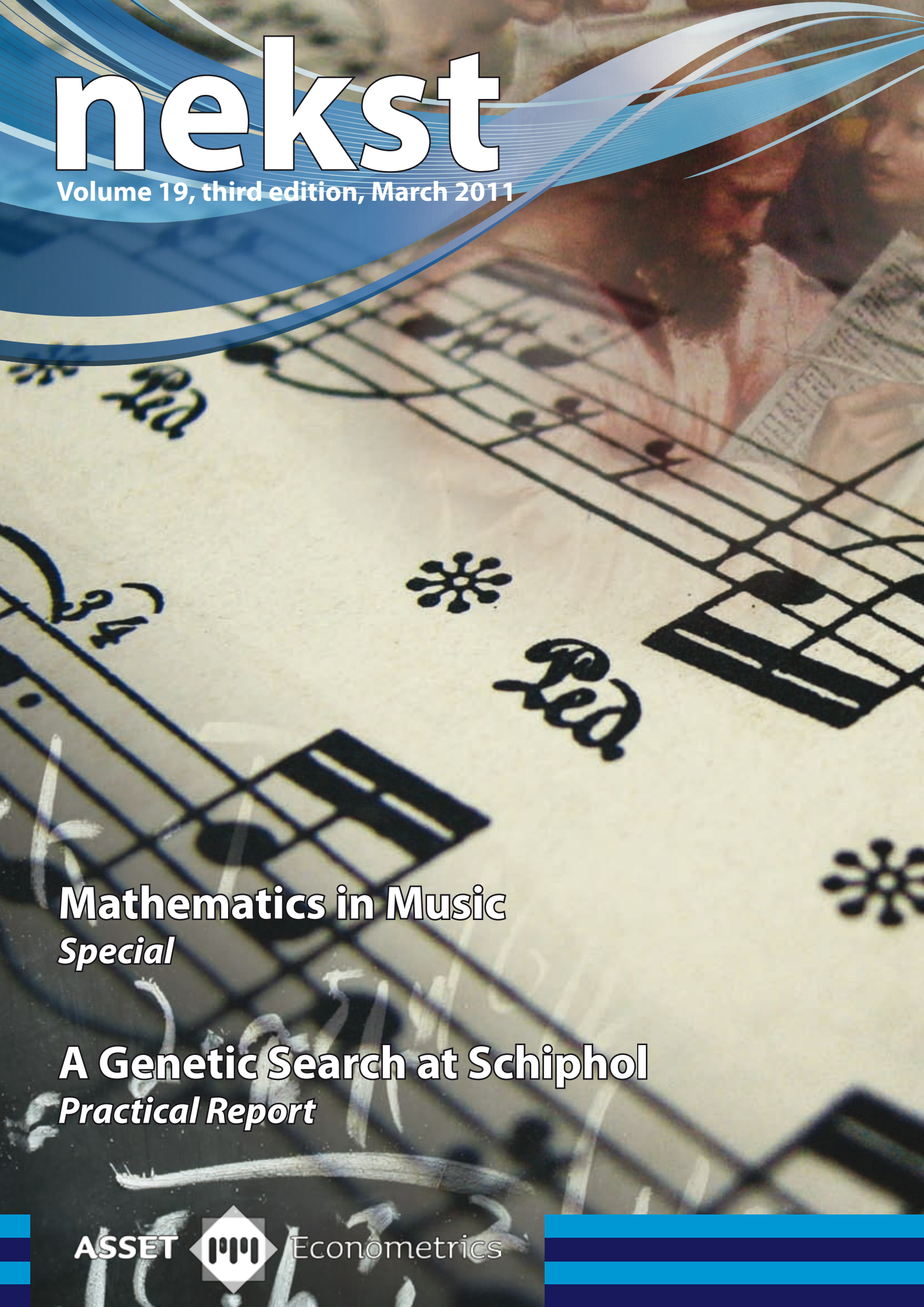

Mathematics in Music

Special

A Genetic Search at Schiphol

Practical Report

ASSET Econometrics

NIBC

Preface

To Tell or not to Tell?

So much time has passed since the last time I wrote a preface. More than the first half of my year as an editor-in-chief has already passed, and I feel the remaining months of this academic year will be over just as soon. No time for mourning or reminiscing though, as I have plenty of interesting things to tell you!

First of all, I have yet another two editors to welcome to our marvelous team: Pieter Platteel and Geert Alkema, I hope you will feel the same joy I do from putting together new editions of Nekst with blood, sweat and tears; and, most important of all, love and enthusiasm.

Another thing over which I have been pondering recently as well was, and still is, this preface. I can hear you thinking: 'what, the preface?'. Yes, the preface. I have always wondered, as both an editor and a reader, whether it made sense for editors-in-chief to talk about their own experiences in prefaces. As you may have noticed from the prefaces of Nekst 1 and Nekst 2, I found it inappropriate to hog the first page of Nekst blabbering about my tiny and unimportant self, while there were so many interesting articles to promote and read. Thus I stuck to writing about what our magazine had to offer, and gave you little information about those day-to-day things I stumble upon as a person.

For this Nekst, however, I decided to do things a little differently. Not because I have actually experienced something interesting, but because I like thinking there are actually people out there who would like to know more about myself. Did you know, for example, that I enjoy playing both the piano and the violin, although my skills at the latter are questionable? I enjoy this so much I wrote an article about these instruments, and their incompatibility together. Go ahead and check it out. Did you also know I am a fan of philosophy? It just so happens that there is another philosopher, professor Meijs, who would like to share his knowledge as a teacher with you. Also, according to some people, I am -apparently- a good dancer. Is there a better opportunity to show off your dancing skills than during a gala? You can read about the annual Asset Christmas Gala in this Nekst as well.

There, I told you something about myself. Of course, there are again tons of interesting things to read in this Nekst for you, and I invite you to find out for yourself what things they are!

Fang Qi Wu

Editor-in-chief

COLOPHON

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APG

Dear Members,

As with every edition of our association's magazine, the honour is mine again to say a few words. The recent political developments make the current days exciting for students, and especially for those who are active in extracurricular activities.

The cabinet's law-proposal to charge students with more than one year of delay during their bachelor's or master's programme worries a lot of students. The obscurity about the possible consequences of decisions students want to take concerning their study career might be a drawback to them to take these decisions.

Of course, it is completely understandable that you do not want to pay an additional charge when your study is delayed by more than one year. But, on the other hand, one should try to look further than this amount of money. Excellent facilities are offered to students to lend the money, at reasonable interest rates.

Let me give you my opinion as a board member of our study association. From this point of view I cannot have other feelings than worries about the consequences to our association, and the position of Tilburg as a 'student city'. I fear the number of students who become an active member or a board member of any kind of association (sports associations, student associations, student fractions, etcetera) will decrease.

I hope that students will keep seeing the importance of developing themselves outside the lecture rooms, not only for their own good, but also to offer their fellow students a pleasant and inspiring study environment. Let me give two examples of two recent activities which could not have been realised without the enormous efforts of active students. On 15 February the highlight of the year of every student in econometrics took place: the National Econometricians Day. About fifty students from Tilburg went to Rotterdam to have the opportunity to meet their future employer. After a successful day, an even more successful party in the Cinema ended the National Econometricians Day 2011. This day could not have been possible without the time and efforts the organising committee and the volunteers during the day have put into organising this event.

A week later, our yearly symposium took place in our own city. In cooperation with Asset | Economics we organised a very interesting day on the future of the Euro. The speakers were among the top economists of the Netherlands. The symposium even turned out to be newsworthy, since the next day three newspapers (of which two are national newspapers) wrote an article about the symposium. Again, this event would not have taken place if there would not have been enthusiastic students willing to organise events like these.

I hope that you will be able to look at your study career and your development as a young-adult not only on a day-to-day basis, but that you will have the courage and thoroughness to choose for the bigger picture and the long run.

Nonetheless, I will conclude with some activities which will take place in the short run. From 4 until 14 April, the largest recruitment event in Tilburg will take place: The Economic Business weeks Tilburg. During two weeks over fifty companies will visit Tilburg and you will have the possibility to meet them during different kinds of activities, such as company presentations, workshops and informal activities.
After these (hopefully) wonderful two weeks, we will have a maybe even greater weekend: our Active Members Weekend. From 15 April until 17 April we will have this yearly event, and as always I cannot tell you anything more about it since the committee keeps everything secret until the very last moment.

On 3 May we will conclude the formal activities of this year with a new activity of ours: the Econometric Challenge Tilburg (ECT)! The committee is working hard to make this first edition of the ECT a great success, and we hope that many editions will follow. Soon you will receive more information about this activity.

I wish you all pleasant last months of this academic year and I hope that spring and summer will arrive soon.

On behalf of the board,

Bart van Schuppen
Chairman Asset | Econometrics 2010-2011

Name:
Bart van Schuppen

Position:
Chairman Asset | Econometrics 2010-2011

INTERVIEW

Researcher in the Field

On 23 February the Euro Symposium, organised by Asset | Econometrics together with Asset | Economics, took place. One of the speakers and participants of the panel discussion during this day was Prof. Dr Jakob de Haan. It was the perfect opportunity to interview this interesting man.

Name:
Jakob de Haan

Position:
Head of Research at De Nederlandsche Bank

Jakob de Haan is Head of Research of 'De Nederlandsche Bank' and he is also Professor of Political Economy at the University of Groningen. He has published extensively on issues such as public debt, monetary policy, central bank independence, political and economic freedom, and European integration. Besides this, he is a member of the editorial board of Public Choice and European Union Politics, editor of the European Journal of Political Economy, and has been President of the European Public Choice Society. De Haan has been a visiting professor at the Free University Berlin, Kiel Institute, and the University of Munich. For more than 11 years he has been Scientific Director of SOM, the graduate school and research institute of the faculty of Economics and Business of the University of Groningen. After a lively panel discussion it was time for Nekst to fire some additional questions, not necesssarily related to the Euro, at Jakob de Haan.

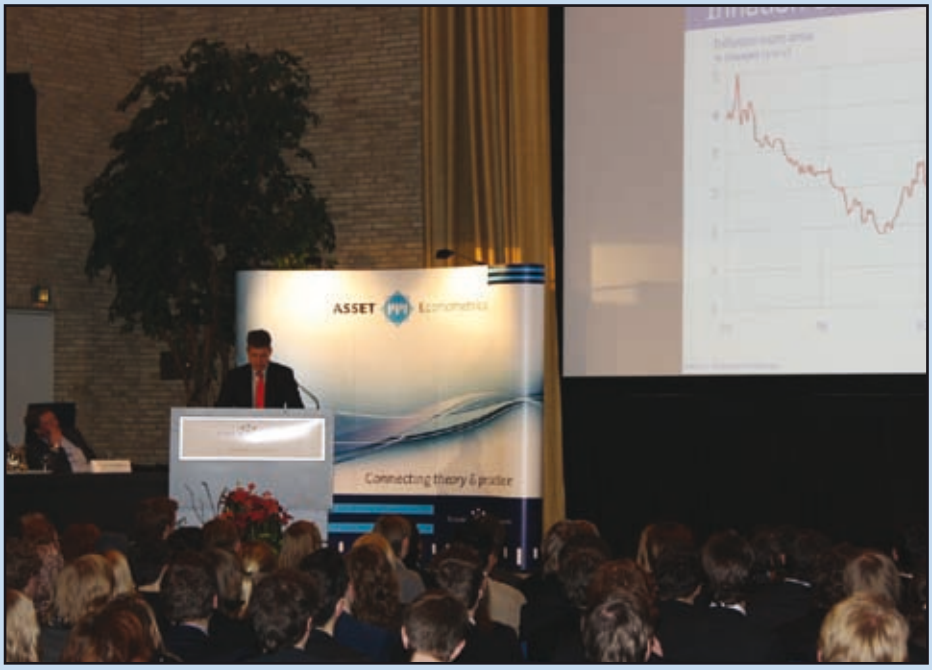
Extracurricular Activities

Jakob de Haan was born in Delfzijl in 1960 and after his pre-university education he started studying Economics at the University of Groningen. During his studies he did not have to work due to the generous study grant you received from the government at that time. However, although Jakob de Haan did not have a part-time job, he was very active besides his studies. He was, for instance, a member of a student association, but more importantly, he has been a youth delegate for the United Nations after finishing his bachelor. For this he visited New York twice and even lived in New York for four to five months. It was a jump in at the deep end, but at the same time it was extremely useful. During this time he had to act as a diplomat negotiating with, for example, youth delegates from other countries. He believes he learned at least as much from these experiences as from studying. De Haan: 'I would not have been who I am now without my extracurricular activities. I think it would be very bad, for students and for the society as a whole, if students would only study and would not have the opportunity to do extracurricular activities anymore.'

Why Professor?

After hearing about his interest in politics and knowing he became a professor at a university, it is an obvious question why he did not pursue a career as politician. Jakob de Haan: 'I have considered it, but I concluded it is not suitable for me. I am too stubborn as a researcher and too independent as a thinker. If I have a certain vision I will speak my mind, even if it might not be politically opportune.' During his studies he did not have the idea of becoming a PhD-student and becoming a professor at a university, but during one of his master courses, namely Public Finance, which he passed with a very good grade, his teacher asked him if he was interested in a position as PhD-student. As it was an interesting field to work in, Jakob de Haan applied for this position and eventually got it. It was only while writing his dissertation that he realised he did not know everything. 'I discovered that there was so much to study and so much to learn and so much to do research on and I liked that,' he says. Nowadays Jakob de Haan likes teaching very much and according to himself he is a teacher in the true sense of the word: 'I am a teacher who does not only want to teach his students about the course matter, but also one who is not hesitant to discuss the deeper questions of life with students. That is why I still work one day a week at the university nowadays.'

Jakob de Haan's current job is being Head of Research at De Nederlandsche Bank. After working at the university for a long time the reason he made this career switch is the following:



'At some point you become fifty years old and you think: what am I going to do now? Will I stay professor for the rest of my life or do I want a different job? I have been Scientific Director of SOM for eleven years and I liked the combination of management and research. So when at some point De Nederlandsche Bank came around looking for a new head of research, I thought it would suit me very well.' Besides combining management and research, another positive aspect of his job is that you are close to policy making and you have a better idea what is going on.

Other Points of View

We wonder what the most interesting developments are in De Haan's field of work. Before answering this question he first tells us he has always been fascinated by some of the marginal areas in economics or, at least, what used to be marginal areas. De Haan: 'I have never been a pure neoclassical economist. Regarding the idea of optimising behaviour and rational expectations, I have always had my doubts. It is nice as a model, but not as an approximation of reality. I have always been interested in the role of institutions and the interaction between politics and economy.' Recent developments are, mainly due to the crisis, that there is more interest for more alternative approaches outside the neoclassical framework. Nowadays there is more room to use different views, for instance from the point of view of psychology, on economics, because the standard economic approach does not always work, as is the case with financial markets. De Haan: 'The idea that financial markets work perfectly is an illusion. You need other angles to explain.'

As Jakob de Haan's work has been mostly empirical, it is interesting to know what he thinks about economic models and more specifically, econometrics. He thinks econometrics is important but according to him, within econometrics there is a sort of dichotomy. On the one hand you have the theoretical econometricians and on the other hand there are the people who apply econometrics. Often the people who restrict themselves to theoretical econometrics are reluctant to apply this knowledge. De Haan, however, finds it is very useful if econometrics can be applied in practice.

To conclude the interview we would like to know what would be an interesting topic for a new symposium. After some thinking Jakob de Haan comes up with a very interesting one, namely supervision on financial institutions and how a financial regulator should act.

Text by: Bart Kruize

'I would not have been who I am now without my extracurricular activities'

Time for some catching up!

GENERAL MEMBERS MEETING & DRINK

The first semester of this academic year has already passed; time really flies when you are having fun. Thus it was time for our board to have a general members meeting (GMM) and, of course, a nice drink afterwards at our favorite pub *Café Van Horen Zeggen*.

Name:
Anniek Joosten

Age:
19

Begin Studies:
2010

On Tuesday 25 January around thirty-five members gathered at *The Gallery* for the second members meeting of this year. We were all welcomed with a nice cup of tea or coffee and took a seat.
Bart van Schuppen opened the meeting and asked me to be the voting commissioner for the voting which would take place during the meeting.

After the approval of the minutes from the last GMM, all the committees of the association were introduced. Every board member told a little story about the progress and activities of the committee they coordinate while the committee pictures were shown on the screen.

The advisory council did not have a lot to remark and the finance monitoring committee also came to the conclusion that, financially, our association was doing fine. That is always nice to hear.

After a short break with yet another cup of tea for me and a cherry turnover, it was time for Bart Kruize to give us an update on the financial structure of the association. When we arrived at The Gallery we had all received an overview of the expected and realised expenses and fundings of this academic year. Since the original budget was adjusted there were some questions from our members. Most of the questions were raised out of curiosity and to clarify matters, such as what the money for new office furniture was for.

Finally, the board had a proposal regarding the rule of becoming a former active member. That raised a lot of questions and soon discussions started between the board and the members. The board got a lot of critical responses and when it was time to vote the majority voted against: so much for the proposal.

When the meeting ended it was time to pack up and go to *Café Van Horen Zeggen*. The Drinks and Activities committee welcomed us with a bubbly and sweet glass of champagne, since this was our New Year's drink. Of course, what is a New Year's drink without a glass of champagne? Soon more members arrived who had not attended the GMM and the pub was crowded with econometricians. Most of them had not seen each other for a while due to the Christmas holiday and exams, so we had a lot to chat about.

Since this was my first GMM I cannot compare this with those of previous years. I did not know what to expect, but it was really interesting and informative to attend.

A GMM like this provides not only more information about the activities and objectives, it also makes it possible for members to evaluate the past activities and to provide the board with input on new ideas and initiatives. In short: attending the GMM is important for all the members of our association.

Therefore I will hopefully see you all at the next meeting!

Sodexo: Thoughts on Food

OPINION POLL

Perhaps you noticed, perhaps you did not. As of 1 January, Albron, the company who covered all catering facilities at the university, has been replaced by Sodexo. The main reasons for the university to switch was that the prices were too high and the quality of the food offered by Albron debatable. Besides, the foodcourt in the Prisma building has been revised and now offers Mediterranean-styled food. What do the econometrics students of Tilburg think?

Lotte Adema (First year student)
I love muffins. Especially chocolate muffins. As an editor of Nekst asked me to write something about Sodexo, the caterer of our university, I must admit the following: I have not had many different things at our university yet. Every time again, when I am hungry, the Sodexo muffins are laying there, staring at me, and they are delicious. Besides this occasional snacking, though, I ate dinner a couple of times at the food plaza. I think the price is okay and the food is fine, but I do not think it is a place where you have your dinner every day. However, if your own cooking skills do not reach further than baking an egg, the food plaza can suffice.

Rutger van Alphen (Second year student)
I have studied at the University of Tilburg since 2009, but I do not eat on campus very often. Although I think the quality of the food is fine and the variety of the food is good as well, I think the prices are too high for what you get. The new caterer, Sodexo, is also too expensive for a student, in my opinion. That is also the reason I only have lunch every now and then at the university, but almost never eat dinner on campus. The only improvement I see is the new assortment in the canteen in the Prisma building. Besides that, however, it also looks better than before. So when they would reduce the prices, I would probably have some food here more often.

Tim Hendriksen (Third year student)
The new catering services at Tilburg University seem to be an improvement compared to the old ones. Most of the reactions I hear among fellow students are positive or at least not negative. Personally, I think a major improvement is made at the catering of the Prisma building. The variety of the products is much higher and this also seems to hold for the quality of the products. Since the prices are (in my opinion) acceptable, this seems to be a success. The changes I noticed in the other catering services are less impressive. I did not yet try any of the meals at dinnertime, but these hardly could have become much worse. Hoping these meals are better than before and looking at the improvements made at the Prisma building, I am very satisfied with the changes made.

Martijn Verspeek (Fourth year student)
Since I study in Tilburg, and thus eat in the Food Plaza regularly, I haven't really been impressed by the services of Albron. Apart from the dinner meals, the food is of a good quality, but I thought the price was actually too high for what you could get. After I heard that there would come a new caterer, Sodexo, I was rather sceptical, because I could not really imagine that the food would improve, and my negative prejudice was confirmed when they had eventually taken over the campus. Still, I find the price/quality ratio quite harsh for the not so rich student, but I must say that I find the greater divergence in food around the whole campus a great improvement. Apart from that my opinion about the Food Plaza is that the supply has changed, but it has not really been improved nor has it become worse. Actually I find it the same, except for the name.

Risk Management and Frequency Domain Scenarios

SCIENTIFIC ARTICLE

ORTEC FINANCE

Name:
Hens Steehouwer

Position:
Head of Research

Name:
Bert Kramer

Position:
Team Manager Reserach

The worldwide credit crunch has led to many financial problems, e.g. in the Netherlands where pension funds were hit hard by dropping investment returns and low interest rates. September 2010, the average funding ratio for Dutch pension funds was 99%, and around 68% of the funds were underfunded.

That is, the market value of their assets had fallen below 105% of the market value of their liabilities. On the one hand, switching from stocks to bonds might appear necessary to reduce short term risk of further decreasing funding ratios. On the other hand stocks are generally perceived to be a necessity for realizing the long term indexation ambition at acceptable contribution levels. This exemplifies how the credit crunch reemphasizes the necessity of a well founded strategic risk management that adequately balances short term risk limits and long term ambitions. In this article we describe how frequency domain scenario techniques can be used to consistently model economic and financial risk and return across different investment horizons.

ALM and Strategic Risk Management

As the return on a risk free investment portfolio will usually be too low to guarantee, at an acceptable contribution level, the long term ambition, a pension fund will have to take risk. As a rule of thumb, 1% extra return is equal to 30% higher pensions or 30% lower contributions, thereby demonstrating the crucial role of investment risk in realising the formulated pension ambitions. However, based on the available historical data, in any given year a global stock exchange index faces a 2.5% chance of decreasing more than 30% in value and, moreover, such weak stock markets can persist for a prolonged time, as evidenced by the crisis in Japan during the 1990s and the very slow recovery after the crash of 1929. It is therefore paramount to determine the investment risk as high as is responsible, yet always on the precondition that, if this risk actually materialises, it can still be safely absorbed.

Asset Liability Management (ALM) models are used by pension funds to support the choice of the risk (and return) appetite of all stakeholders, including the policy horizon, and specify an integral policy that meets the long term ambitions of the fund. Amongst others, the natural asset mix is established which represents the allocation to strategic asset classes that can realise the ambition established in the pension deal while simultaneously respecting its appetite for risk. ALM projects utilise the technique of scenario analysis. Scenarios are future trajectories modelling the external insecurities that decision makers must take into account in their policy determination and evaluation. They concern inflation, interest rates, currencies, the returns of the various asset classes, and the development of derivative instruments, such as swaps and options. ALM projects calculate, with the use of a corporate model of the pension fund, for every year and each scenario, what the consequences of the policy intentions are for all stakeholders involved.

To realise the ambition, it is important that the assumptions that formed the basis of the ALM strategy are monitored regularly. There are three main reasons to adjust the natural asset mix, namely:

1. when the financial markets are temporarily unbalanced;
2. if the economic views are structurally changed (for instance, lower equity risk premium, lower real interest rates); or
3. if risk approaches or even exceeds the risk limits.

Temporary deviations should lead to temporary policy adjustments that take into account short term consequences. Structural changes to the assumptions should lead to structural adjustments of the pension deal. Both aspects are an integral part of Strategic Risk Management (SRM).

Economic scenarios for the short and long run

Usually, different scenario models are used for the different phases of the investment decision process: strategy (ALM), implementation of the strategy and monitoring of the strategy (SRM). Amongst others, this is caused by the fact that different applications pose different demands on the scenarios. Determining the long term strategy requires scenarios that adequately describe the long term characteristics of a limited set of key variables on a yearly basis where averages, volatilities and correlations are important. Monitoring,

on the other hand, requires scenarios describing the short term characteristics of a much larger set of individual portfolios on a monthly basis, where in addition also the behaviour in the tails of the distributions is important. A shortcoming of the typical approach with different models for different applications is a lack of consistency between the different scenario sets. As the different phases of the investment decision process are linked, this is undesirable. That is, consistent scenario sets should be available for strategy, implementation and monitoring. Using consistent scenarios gives a better insight into the long term implications of strategic and tactical decisions. Therefore, the following requirements should be met:

1. Multihorizon: models should be able to generate scenarios for short, medium and long horizons. That is, ranging from a few months to a few years to several decades.
2. Multidimensional: models should be able to generate scenarios for hundreds of variables.
3. Realistic: scenarios generated by the models should contain all real world features and dynamics.

Examples of well known real world features as reported by the academic literature are:

• Term structure of risk and return: risk and return properties such as means, volatilities, correlations and distributions vary with the investment horizon. For instance, the correlation between equity returns and inflation is around zero for short horizons, but it increases to over 0.5 on a 30 year horizon.
• Business cycle dynamics: for example, stock prices tend to lead the business cycle (in GDP) while unemployment typically lags the business cycle.
• Volatility dynamics: volatility itself is volatile and shows dynamics and correlations. Typically, the correlation between the actual return and volatility is negative for equity (high volatility and bad returns tend to happen together).
• Tail risk: correlations increase in the left tails of the distribution. Consequently, the benefits of diversification disappear during crises at times when it is needed most.

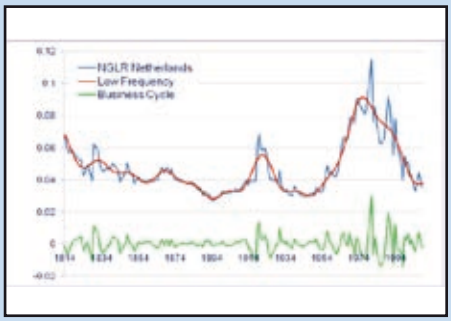


Figure 1: Frequency decomposition of the Dutch long interest rate

• Non-normal distributions: distributions typically do not resemble the Normal distribution, but are skewed and have fatter tails.

Frequency domain techniques

We propagate the use of frequency domain techniques as described in, for example, Steehouwer (2010) to bring all horizons, observation frequencies and variables together: combined with factor models for high dimensional processes. The frequency domain methodology consists of a number of statistical and econometric techniques such as spectral analysis, frequency decomposition (filtering) and frequency restricted stochastic processes. The aim is to describe all the aspects of the time series behaviour of economic variables at the same time, rather than focusing on a subset of aspects (e.g. only the long term properties). The basic idea underlying the methodology and frequency decomposition in particular is illustrated in the figure. It shows how the long term interest rate series (NGLR Netherlands) can be decomposed into a long term (low frequency) and short term (business cycle) component using filtering techniques. The filtered components are orthogonal (uncorrelated) and add up to the original series. Spectral analysis techniques can be used to further analyse the (multivariate) dynamic behaviour of the filtered time series.

A frequency based decomposition has the following advantages:

• There is no loss or suppression of long term information (as happens when modelling based on returns): both long and short term fluctuations are visible.
• Appropriate data can be used for the relevant aspects of the series behaviour: for example, long term series for long term behaviour.
• Empirical behaviour at all horizons can be modelled simultaneously due to separate modelling of the various components. Because they are uncorrelated, separate models for the various components can be devised. In the end the results from the component models can then be brought together again.
• The example shown in the figure is based on annual data. However, the approach can be extended for the integral modelling of monthly, weekly or even daily series, also with different samples.

Conclusions

In this paper we have described a frequency domain methodology for time series modelling. With this methodology it is possible to construct time series models that give a better joint description of the empirical long term behaviour of economic and financial variables, bring together the empirical behaviour of these variables at different horizons, and get insight in and understanding of the corresponding dynamic behaviour. Thereby, this methodology contributes to a higher quality of investment decision making, implementation and monitoring and hence a higher probability of investors actually meeting their long term goals.

References

Steehouwer, H. (2010), "A Frequency Domain Methodology for Time Series Modeling", in Interest Rate Models, Asset Allocation and Quantitative Techniques for Central Banks and Sovereign Wealth Funds, edited by Berkelaar, A., J. Coche and K. Nyholm, Palgrave Macmillan.

Bobbi Bear

Farmers Feeling Lucky?

COMBIPARTY

After the success of the previous combiparty, in which Asset | Econometrics joined forces with Asset | SBIT, Versot, Flow, Polis and Input, it was time for yet another combined effort of some of these study associations, namely the second combiparty!

This time the theme of the party was: 'Als Boer op Versiertoer', which can be translated to 'like a farmer wooing people'. Yes, one had to dress up as a farmer. Thus, on 17 February *Café Miller Time* transformed into a farm to welcome our farmer friends. A farm which was perfect for this party. The farmer outfits, decorations, shots of 'milk' (which were really pina coladas) and video screens showing cows and our lovely Dutch scenery: they all turned *Café Miller Time* into a party barn.

Soon, the pub was filled with people who had all done their best to dress up as a farmer, and I must say: they had succeeded very well! After a hard day of work in the fields, nothing is better than an ice cold beer, and after a few, the party was getting started. During the night, more and more people found their way to our party barn, most members from the organising study associations: Asset | SBIT, Versot, Flow, Input, Asset | Strategy & Logistics, Asset | FIRST International and Asset | Econometrics.
The committee which organised this party had managed to provide four free barrels of beer and farm-like shots to bring out the animal in everyone. This night was bound to be a lucky night for those farmers and countrygirls in search of that one special person. During the night, Lisanne from Flow and Ad from Asset | Econometrics tried to find the perfect farmer couple. Their matching skills paid off, and we are all very curious about what happened to the lucky couple that night: did they end up in a haystack, or not? What we do know, however, is that the party was a big success!

Never before were there so many happily dancing and drinking cows, pinguins (does that make sense?), farmers and cowgirls in one place.

As we had forgotten about the time, since the party was so much fun, it went by way too fast. *Café Miller Time* had proven to be a fine location for this combined festivity, but without the partying people and the fantastic outfits, the party would never have turned out as well. With the barrels of beer left empty and pieces of straw everywhere, all farmers returned to their homes, hopefully being lucky enough to have found the countryboy or countrygirl they were looking for!

Name:
Leo Tegelaar

Age:
21

Studies:
Communication & Information Sciences

THE TEACHER

‘Das reine Sein ist das reine Nichts, und das ist das Unbestimmte’

In this feature a lot of professors have been interviewed from the Tilburg School of Economics and Management. Most of them were professors who gave specific econometrics courses. However, for this Nekst, we wanted to give a twist to this tradition.

Name:
Paul Meijs

Position:
Associate Professor

So instead of heading to the good old Koopmans building we entered the Dante building, the main building of the philosophy department, where Dr Meijs was already waiting for us. As some of you might know, Dr Meijs teaches Social Philosophy and Philosophy of Science to econometrics and economics students in the third year.

A Quest to Nothing

Dr Meijs was born in the one and only village where annually, around Pentecost weekend, people cause minor earthquakes and massively wear pink hats. A town where many famous artists such as Tina Turner, The Rolling Stones and David Bowie have performed… Of course this must be the village of Landgraaf.
During high school Dr Meijs did not bother thinking about what he wanted to be. He enjoyed life to the fullest and thus, it took him two years extra to complete high school. He was very rebellious and switched schools four times. Besides partying, he was very good at tennis and trained a lot.

He went on to study psychology at Radboud University Nijmegen, but after two and a half years (almost finished with his bachelor) he decided to switch to philosophy. This was because psychology is about abstract American theories on humanity and he could not do anything with this. “I remember it very well: it was a Saturday morning and while standing in front of the mirror I said to myself: Well Paul, you can say that you want to stop with psychology and do nothing, but do you actually know what that is, nothing? That is how I got into philosophy.”

During this part of his life he intensively dedicated himself to gaining knowledge and reading many books. There was no place quiet enough in Nijmegen to concentrate, so he retreated to a monastery nearby and studied seventeen hours a day! He even started complaining about how easy his studies were and that it was not at the level he wanted it to be. However, the study was quite hard and not many people were studying it. Because of this there were only oral exams. About this time he says: “I was completely obsessed with philosophy.” Close to completion of his studies after five and a half years (take into consideration twelve years was average for philosophy back then), he thought about a job. “You do not study philosophy for a job, so I started studying to become a sociology (Dutch: maatschappijleer) teacher in secondary school.” He completed this in half a year, while it normally takes one and a half year and also wrote a book on property that became a bestseller. Clearly, Dr Meijs is not an average man. In his free time he likes running, playing tennis and going to the theatre. Also, he likes reading different kinds of books and novels. Furthermore, Dr Meijs is not married and does not have children.

Discipline and the Pub

His master thesis was on “the bureaucratic phenomenon” which was also published as a book and even awarded a prize. He immediately got a job offer at Radboud University, because they rightfully considered him a bright young man. This entailed giving lectures about philosophy. “You have to imagine I was 27 back then, giving lectures during the 80’s to fellow students. It was not unusual that I went to the pub with them after lectures.” Giving lectures is something he enjoys doing very much and he also has a great affinity with students. It seems that during this time he had to make up for some of the social time lost in the monastery. “To some extent I am a hermit, but I am also

a people person. I love partying, but at the same time I can be extremely disciplined."

After a year at Radboud University, Tilburg University contacted him because a new spot opened up for a philosopher at the Tilburg School of Economics and Management. He focused on gaining economic knowledge when he got here because in Dr Meijs opinion: "If you want to teach something to students you have to know how they think as well and be able to talk and comprehend their terminologies. Econometrics students are the intellectuals of the economics students, because econometrics is even more abstract than philosophy. The reality is expressed in numbers, which is fine, because together with formulas you can get a satisfying result. In mathematics, the road to the solution is more interesting than the solution itself."
He obtained his PhD degree during his years in Tilburg in a rather unorthodox manner for his time, namely by promoting on previously published work by himself. One of the promoters called him the most stubborn person he had ever promoted while defending his dissertation. As of today, Dr Meijs has been working at our university for more than 30 years. During this time he has been part of numerous committees and the university council. This semester he also gives lectures at Radboud University again. "Nijmegen is my Alma Mater, but Tilburg is also in my genes. However, I never moved to Tilburg because I teach so many students that I cannot go anywhere in Tilburg without being seen. If I do 40 beers at the Heuvel, it will not go unnoticed."

The Observer
At some point in the interview we ask him about his habit of observing students during break and during lectures. How did this come to be, has he always been an observer? "During my sociology studies, I did an internship at a high school in Cuijk. These kids entered the class room with a cigarette in their mouths and without any bag. It was total chaos, and I was not sure how to handle this group, so I decided to just silently sit there. Because they were used to a teacher banging his fist on the table screaming for silence (perhaps he knew from his own rebellious period this was not going to work), I made them really nervous. At some point I walked up to the dominant one of the group, and asked him if he wanted to be my adjutant. This way I let him keep the others under control. I think this caused me to really observe the lecture rooms." The preparation of a lecture is very important, because then you can keep an all seeing eye on the students while giving the lecture. "The person in front of a lecture room is the only one who can see the entire room."
Since then Dr Meijs has another tactic to keep students under control: he has a zero tolerance policy during his first lecture and it is not a rarity for people to get sent out. The following lectures he becomes less strict and he often talks to students during the break.

The Summary of Life
He did not know what to expect of philosophy beforehand. He had one purpose, and that was getting an answer to the question: 'What is nothing?' Plato already questioned himself long ago: 'What is reality and what is not?' "A professor in metaphysics once asked the students during a lecture: "Does a flying dragon exist above Goesbeek?" Dr Meijs comments: "At the moment I ask you this question, you see this dragon. So does it exist or not?"

The TV-show *Secret story* is a good example of this phenomenon: the reality, the truth, is not present anymore, because it is not evident what is spontaneous and what is orchestrated. People believe what is said on the internet and spread this in their daily knowledge. Game-addiction has become reality, while this is fictive. Science wants to control, economics wants to predict the market, but they failed as a science! This is because economics has become way too abstract, tending to fall in a fictive trap, which was seen during the financial crisis. In others words, economic science must go back from fictive to reality.

Philosophy is an important part of your studies according to Dr Meijs. For him the title of this interview, a quote by Hegel, is the summary of life. In this quote he has found the answer to the question: 'What is nothing?'

Advice for Students in Tilburg
At the moment, he is busy trying to answer the following question: "What is the moral foundation of the modern society?" He does not know the answer yet, hence we do not ask him about it too much.

His advice to students is: "Read books, novels, go to the theatre, and besides that, enjoy your life. It is important to be curious about others and about the world. Try to learn from every situation, expand your horizon, and do not talk about yourself, because the subject 'you' is what you already know."

Text by: Patrick Kuijpers & Corné Ruwaard

SPECIAL

The Magic of Mathematics in Music

Everyone who has ever played a piano can tell that pressing a key one octave lower or higher produces almost the 'same' kind of sound, though not exactly. Not everyone knows, however, that the piano is actually impossible to tune in perfect harmony, and that most notes are always a little off. Why is that so? Read on to find out.

We will look at the Pythagorean comma and the problems it causes when certain instruments are played together. Before we can dive into this subject though, it is useful to gain some more insight with regard to music theory and the history of music.

Pythagoras' Philosophy in Numbers and Music

Music is often regarded as one of the universal languages in which people can communicate with one another. It is no surprise then, that music was quite important in philosophy as well. A good example of this is the philosophy of Pythagoras and his followers. This Greek philosophy has played an important part in the creation of the Western system of musical tones.

Pythagoras used numbers as the basis of the universe. He stated the following: from the origin, the number 'one', the universe develops itself until perfect completion, the number 'ten'. This he illustrated with the use of the system of musical tones. Events happened according to eight steps, which equal the eight tones of an octave. In an octave there are two steps which are smaller than the other steps, namely from the third to the fourth tone and from the seventh to the eighth tone. The step from the third to the fourth tone is seen as the beginning of the event, and we can say the event ends when you go from the seventh to the eighth tone.

Pythagoras discovered that the notes of an octave can be divided according to certain relations, described with the first few natural numbers. The easiest relation is that of 1:1, which indicates that two tones have exactly the same frequency. The relationship 1:2 indicates an octave, where one tone produces a frequency which is twice as high as the other tone. The other relationships are:

- 2:3 perfect fifth
- 3:4 perfect fourth
- 4:5 major third
- 5:6 minor third
- etc.

We shall see, in the rest of this article, that the perfect fifth, which will be explained later on, will play a fundamental role in our current system of musical tones.

Music Theory

As not everyone is very knowledgeable with regard to music theory, here is a short introduction which will provide some useful information in order to help you understand the rest of this article.

We will illustrate the Western system of tones with the help of the keys on a piano. As seen in Figure 1, our musical system uses twelve different tones, which each have their own name - some with double names, of which you will see the use later on - and are ordered as follows:

C - C sharp - D - D sharp - E - F - F sharp - G - G sharp - A - A sharp - B or

C - D flat - D - E flat - E - F - G flat - G - A flat - A - B flat - B.

In both cases C is the lowest tone and B is the highest.

When we speak of an octave, this refers to the distance between two tones of the same name. For example, the distance between the C on the left and the C in the middle of the keys in Figure 1 is an octave. In terms of physics, as mentioned before: when the frequency of a tone is twice as large as the frequency of another tone, we say that these two tones form an octave.

Furthermore, when you increase a tone on a white key by a 'half' it is renamed to the name of the tone itself while adding the sign 'sharp'. Thus C becomes C sharp, D becomes D sharp, etc. When lowering the tone on a white key by a half we add 'flat' to the name of the tone. B becomes B flat, A becomes A flat, etc. We call the distance between A and A flat a semitone, and the distance between two white keys are usually whole tones, except for the intervals E-F and B-C, which are both semitones too.

Circle of Fifths

A circle of fifths is a circle depicting the twelve notes of our musical system on a circle. It is constructed by starting at a note, usually C, and then moving

A	A Sharp	B	C	C Sharp	D	D Sharp	E	F	F Sharp	G	G Sharp
440 Hz	469.863 Hz	495 Hz	528.596 Hz	556.875 Hz	594.671 Hz	626.484 Hz	660 Hz	704.795 Hz	742.5 Hz	792.894 Hz	835.3125 Hz

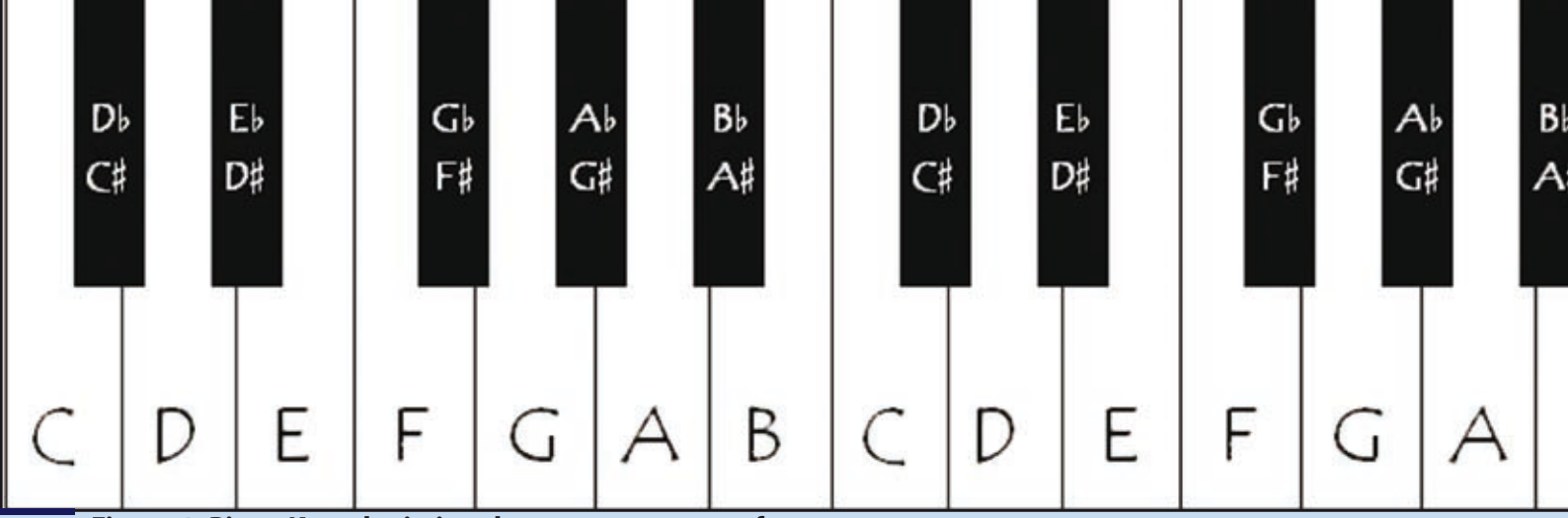


Figure 1: Piano Keys depicting the western system of tones

around the circle while each time adding a perfect fifth, which is the interval of seven semitones. Thus, the note after C would be G, then D, A, etc. You can see a full circle of fifths with the twelve notes and their corresponding keys below, in Figure 2.

The Pythagorean Comma

Now that we have all the basic knowledge we need, we can move on to the scope of this article, namely: the Pythagorean comma. This may still sound strange to some people, so let us look at the definition of a comma.

A comma is considered to be the interval or difference which results from tuning one note in two different ways. There are several ways of tuning a key instrument, of which the equal temperament is the most used. The size of a comma is usually expressed in terms of cents: a cent is 1/1200 of an octave on a logarithmic scale. We are not speaking of a normal comma though, which would be a syntonic comma, but here we are dealing with the Pythagorean one. What does this mean, exactly? To put it shortly, the Pythagorean comma is the small interval existing between two enharmonically equivalent notes, when they are tuned according to perfect fifths. This applies, for example, to the notes B sharp and C, or D flat and C sharp. The Pythagorean comma is about 23.46 cents. This interval, or difference, is best illustrated with the use of a circle of fifths. You can see that in Figure 3, on the next page.

We already mentioned that perfect fifths have a ratio of 3:2. Thus, if A were tuned at a frequency of 440 Hz (which is usually the case), the note E would be tuned at 660 Hz, and the note B would be tuned at 990 Hz, 495 Hz if chosen an octave lower. This causes some problems, however, because if we tune this way we get the frequencies as depicted in the table on the left page.

What is the problem, exactly? Let us compare the frequencies we gained above with what we know about the ratios of these tones. We know that the ratio of an octave is 2:1, and also that the ratio of a perfect fifth is 3:2. Since the interval from D - A is a perfect fifth, 1.5 times the frequency of D should give us twice the frequency of A. We find, however, a difference of approximately 12 Hz. Thus the second A is higher than it is supposed to be. To put it in other words: stacking 12 perfect fifths is not the same as stacking seven octaves. Or, more mathematically:

$$\frac{3^{12}}{2} \neq 2^7$$

This has been an age-old problem for musicians, as playing instruments which are tuned according to perfect fifths, such as the violin or other string instruments, together with instruments based on the chromatic scale, such as pianos, creates problems: the instruments are not in tune, or rather, the piano would be off-key.

Most key instruments are tuned according to equal temperament, in which one chooses to use the octave, the perfect fifth and the perfect fourth as their basis. The reason for doing this is that these intervals are the most consonant, meaning they are the most stable and pleasant to hear, as opposed to the more dissonant higher ratios. In general, the higher the ratio, such as 9:8 or higher, the more dissonant an interval will be.

What does all of this have to do with the Pythagorean comma though? In the case of equal temperament, one spreads the difference, the Pythagorean comma, over the twelve notes of an octave. The difference is, in terms of frequency ratios, approximately

$$\frac{(\frac{3}{2})^{12}}{2^7} = \frac{3^{12}}{2^{19}} = \frac{531441}{524288}$$

We divide this difference over the twelve notes by taking, for each note, 2^(x/12), where x is the order rank of the note. If you apply this to A = 440

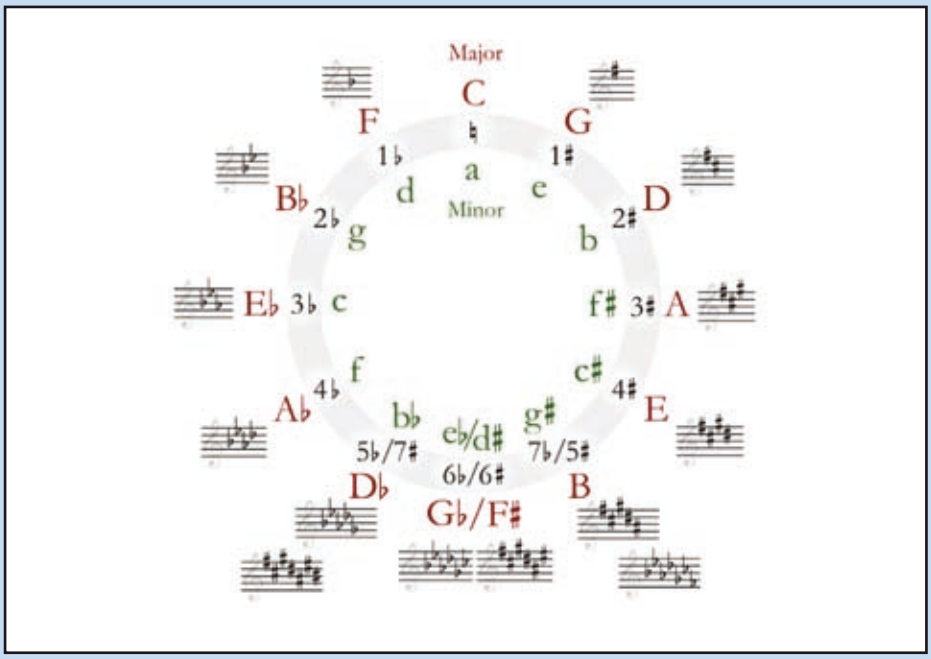


Figure 2: Circle of Fifths

PGGM

A	A Sharp	B	C	C Sharp	D	D Sharp	E	F	F Sharp	G	G Sharp	A
440 Hz	466.164 Hz	493.883 Hz	523.251 Hz	554.364 Hz	587.33 Hz	622.254 Hz	659.255 Hz	698.456 Hz	739.989 Hz	783.991 Hz	830.609 Hz	880 Hz

Hz, with x(A)=0, we find the results as depicted in the table at the top of this page.

As you can see, these frequencies differ from the ones we found earlier, but in this case we do have perfect octaves, and we find that the differences in frequency of each note compared to the earlier ones is exactly (531441/524288)^(1/12), or in terms of cents:

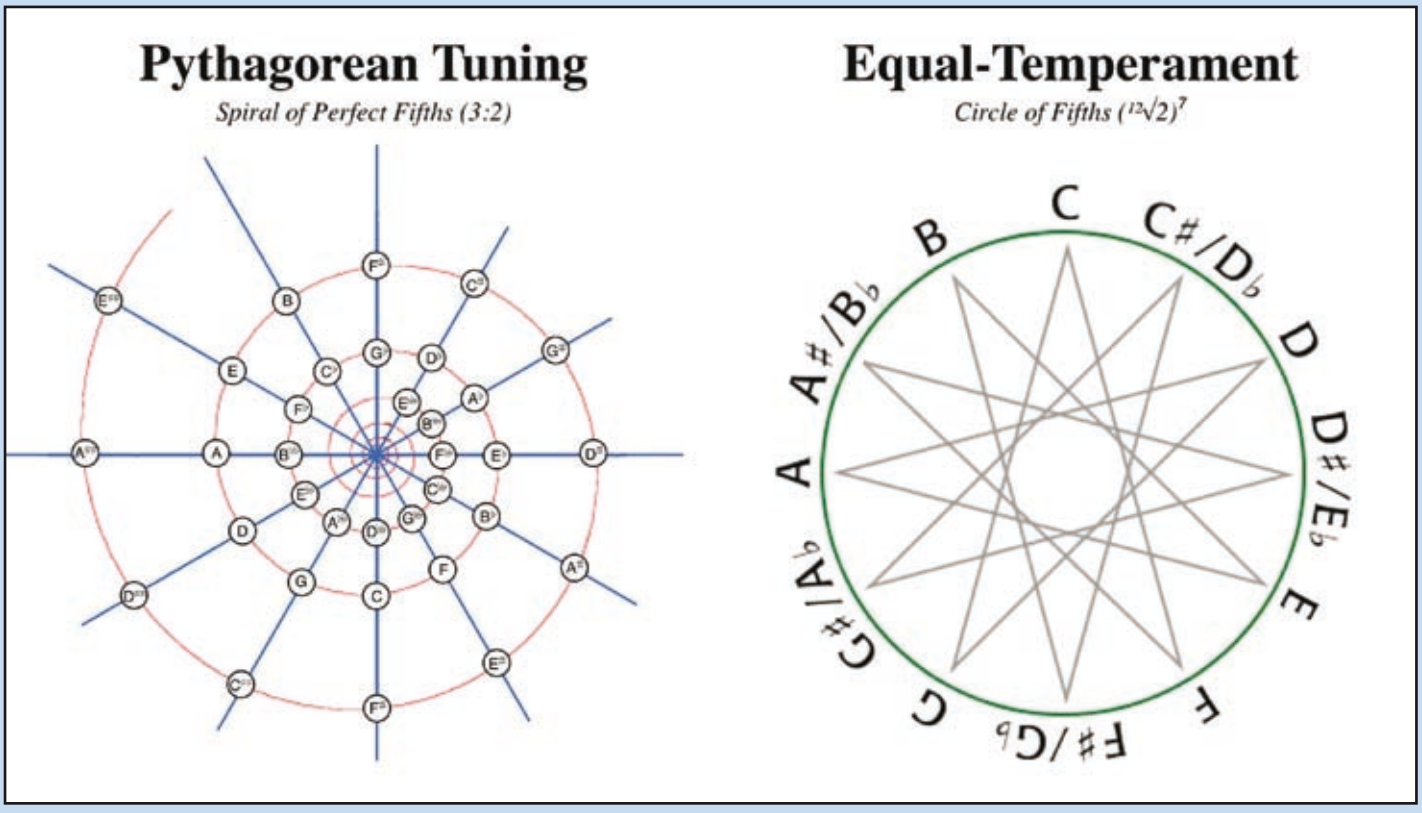
$$1200 * {}^{2}\log\left(\frac{531441}{524288}\right) \approx 23.46$$

There you have it: why pianos will never be tuned completely in perfect harmony. There are, besides the equal temperament, other tunings out there as well. To name a few of them: Meantone temperament, Werckmeister III, Rameau and many more. Equal temperament is the most used, but not necessarily the best. One can choose different kinds of tuning for different pieces, depending on one's own preferences. The problem with tuning will always remain though, but that will not stop anyone from enjoying a piano's (false) tunes, will it?

Text by: Fang Qi Wu

References

1. Fred Bettenhausen, Frits & Hans van Krevelen, Clavecimbel, clavichord en pianoforte - stemmen, stemmingen en onderhoud, Uitgeverij De Toorts, Haarlem, 1984
2. Jan van de Craats, De juiste toon: de wiskunde van toonsystemen en stemmingswijzen, Epsilon Uitgaven, 2005



ACTIVE MEMBERS MEETING

Active With a Capital A

After the General Members Meeting (GMM) on 25 January was held, it was time for the Active Members Meeting on 9 February. The meaning of the GMM was for the board of Asset | Econometrics to inform the members about everything with regard to the association, but now it was our turn to express our opinions.

Name:
Joep Thijssen

Age:
18

Begin Studies:
2010

Presided by the board, several issues were submitted. Before we could start talking, the lovely assistant Ad divided us, the active members, in a couple of groups. We had to give our opinion about three issues and prepare a little presentation about these issues.

The first of the three issues was Nekst, this very magazine. The groups that Ad made started discussing about the magazine of our study association. In my opinion this one was not a really big issue, but after twenty minutes of consultation I was happily surprised. Every group found some little points to talk about. Some of them were negative, most of which were especially cosmic defects, if I am allowed to call them this way. For example, the size of the pictures or the characteristics of two-pages or three-pages-articles. Another one is the Quatsch. Everybody likes it, but it is at the end of Nekst, so everyone starts reading at the end. Maybe it is an idea to put it a little to the front. But in general everybody likes the new Nekst.

Later on it was up to the activities, in my opinion the most important topic of the evening. It struck me that Asset | Econometrics arranges a lot more activities than all the other associations of Asset. To keep it this way it was significant for the board to take into account the vision of the active members. Therefore Ad divided us in different groups to talk about all the activities for another twenty minutes. It was easier to talk about this subject because there are many activities. All of them were divided into two categories: formal and informal activities. It was up to us to give our point of view and to come up with other ideas. We were asked to pick some activities we perhaps liked a little less and also those that we never want to disappear from the list. Another thing we had to do was invent some new activities, formal and informal. It appears for the formal ones that most people wanted to speak with different companies. For the informal activities there were just three main points: beer, beer and plenty of beer.

The last issue was the lay-out of the two Asset | Econometrics rooms. The board wondered whether the rooms were optimally divided and if the members could work properly and had enough fun in the rooms. At this point some very clever geniuses came up with their great fantasies. Everybody immediately agreed that the board has to do the dishes, which nobody has done for a couple of months? One group came with the idea of switching room 109 and 110. Apparently, just switching the numbers of the rooms is not an option. Nevertheless, some really efficient ideas were presented.

It was an evening full of fun and laughter, but also very efficient. The board was content about the high participation of the active members and it has a lot of ideas and some critique to deal with. I wish them good luck, but I am sure they can appeal to their always hard working, handsome, great, fun, happy, busy, energetic, dynamic, labourious, but especially, active members.

Oil and Democracy

COLUMN

"You give me $18-a-barrel oil and I will give you political and economic reform from Algeria to Iran."

(Thomas Friedman, New York Times, January 30, 2005)

The current price of crude oil is around $100-a-barrel. One can debate endlessly about oil price swings and their repercussions on the world economy. Hence, I will not do so, but I want to talk about the well-known claim that more oil tends to make countries less democratic.

The negative correlation between oil and democracy is not specific to Middle East countries, but exists across the world, with few exceptions (e.g. Norway). There are several political sciences and economic studies documenting this negative correlation, but does higher oil wealth cause less democratic regimes?

Ross's (2001) famous study argues that there are two mechanisms through which oil hinders democracy: the rentier effect and the repression effect. Most of the production of oil in non-democratic countries is controlled by the government. The government collects revenues from outside sources and transfers them to their citizens, therefore effectively buying political concessions: this is the rentier effect. The repression effect refers to dictators securing their oil wealth by repressing the formation of other political parties or social groups. The mechanisms described by Ross (2001) are sensible, but his study suffers from endogeneity bias. This is, because like other studies, he proxies oil wealth by oil exports, which may be related to the country's domestic consumption and thus income, which in turn is related to democracy. Other studies propose to remove endogeneity by controlling for the "initial level of income", which is an indicator of the future level of development and thus democracy. But controlling for the initial level of income induces another endogeneity problem because this "initial level" is measured typically after an oil discovery.

A recent study by Tsui (2010) uses exogenous variation in oil wealth to identify whether the effect of oil on the democracy index is causal. Because oil discovery in general can still be endogenous due to drilling equipment already in place, which in turn depends on income of a country, thus on its index of democracy, he instruments it with initial oil endowment, which should be varying exogenously, at least with respect to the size of the wealth and quality of oil. Controlling for country-specific, region-specific and decade-specific fixed effects, as well as other political, economic and religious aspects, Tsui (2010) identifies the effect of oil discoveries on the democracy index of countries by comparing the level of democracy one decade before and three decades after an oil discovery. He finds that even after controlling for endogeneity and several other socio-political and economic heterogeneities across countries, oil discoveries have a large negative impact on the level of democracy in a country. However, if the country is at least-semi-democratic according to the Polity index, then new discoveries have little impact of the existing political regimes.

These findings support earlier studies, but more research is required to confirm hypothesis such as the rentier or repression effect. Related to these effects, many studies find that when oil wealth is measured in per capita terms, the negative effect on democracy disappears. It is unclear whether these studies also suffer from endogeneity bias, or if there are other forces in place, such as volatile demand, restricting oil production to manipulate prices, that make oil wealth in levels a bigger bargaining chip than in per capita terms.

References

Ross, M.L. (2001). Does oil hinder democracy? World Politics, 53:325-361.

Tsui, K. K. (2010). More oil, less democracy: evidence from worldwide crude oil discoveries, The Economic Journal, 121:89-115.

Name:
Otilia Boldea

Position:
Assistant Professor

Always Running the Extra Mile

THE FATHER OF AD VAN HERPEN

Name:
Johan van Herpen

Residence:
Geffen

Name:
Ad van Herpen

Age:
21

Begin Studies:
2008

In the last editions of Nekst, you have been able to read the stories of mothers of some fellow econometricians. In this edition, Nekst thought it was about time to interview a father! That is exactly what we did, and so we headed off to Geffen for an interview with the father of a very special member of Asset | Econometrics: Ad van Herpen.

After a journey of half an hour by (the one and only Asset | Econometrics) car, we drive into the village of Geffen. This is where Ad was born and raised and where his parents still live. We arrive in a quiet neighborhood at the edge of the village, looking out on farms and a windmill. According to Brabant's custom, we enter the house using the back-door. In the kitchen, some preparations for dinner are already made. We start the interview under the delight of a cup of tea.

An introduction

Johan van Herpen, Ad's father, was born and raised in Heesch, a village near Geffen. "I come from a family of six, and my father and mother owned a grocery store." Johan started working in this grocery store when he was sixteen. He liked working in the store, but started learning the profession of butcher elsewhere. After two years, his father asked him to come back to the store. "I came back when I was 18. Three years later business got more serious, as I became joint owner. When I married Els, I liked her working in the store as well. She had the right education. I became the entrepreneur and Els did the administration." The grocery store grew into a big supermarket. Business went well and Johan decided to open another supermarket. A couple of years ago, both supermarkets were sold which ended Johan's career as a grocer. "I invested our money in real estate. Now I still rent buildings."

Hobbies

After selling both supermarkets, Johan had a lot of leisure time. One of his hobbies is running, as Johan participated in three marathons over the past years. Johan finished the marathon of Rotterdam, New York and Terschelling. He has nice memories from the marathon of Rotterdam, as this was his very first marathon. Johan especially remembers the American culture from the marathon of New York: "When I finished the marathon, I received a medal. I saw people wearing these medals for days. Dutch are too humble to wear it for so long." Another one of his hobbies is enjoying a good glass of wine. "This goes beyond just drinking wine. I also want to have knowledge about it." Johan's passion for wine is often combined with his passion for travelling or his abovementioned passion for running. For example, he is planning to run a marathon in the Médoc region, well-known as a wine growing region in France.

Johan and Els

When Nekst asks Johan how he met his wife, he responds: "Well, that is a funny story." When Johan was fifteen, his friends wanted to organise a party, but he could only join the party if he would bring a girl. So, Johan asked his brother if he knew a nice girl. Coincidentally, Johan's brother was dating a girl who had a younger sister. "Els was two years younger and had long, blonde hair." The rest of this story is straightforward, Johan and Els started dating and they got married when they were 22 and 21 years old, respectively. It happens to be that the brother of Johan and the sister of Els married each other as well.

Ad's youth
Now why is Ad named Ad? "In our family, there is a tradition with regard to naming children. My grandfather is called Adriaan. This tradition goes a long way from generation to generation. So Ad is named after Adriaan." Ad's grandfather was very proud when he found out that his grandson was named after him. When Ad was in primary school he also liked his name, as it only contains two letters. "Ad came back from school very proud one day, because he was the first to be able to write his name!"

When he was younger, Ad was a little unfortunate on the medical level. His mother noticed something different about his foot when he was just a baby. After repeatedly consulting the doctor, she was referred to a hospital specialised in orthopedics. It became clear that Ad suffered from 'Talis Verticalis', meaning that one of the bones in his foot was rotated. "He got surgery and needed a plastered leg for nine months." After this period of nine months, Ad got some problems with his eyes, something which runs in the family. A little later, he needed speech therapy. "We had to overcome quite some problems, but in the end it all turned out well."

Ad has always been a bright and optimistic child. You could, and still can, have a good laugh with him and there were never any big problems. Nevertheless, Ad was quite competitive and a real stickler. Regarding this matter, it seems he has not changed a lot.

Mathematics
Being an econometrician, one has to be good at mathematics. So is Ad, and this became apparent in elementary school. When Ad was in the third grade of elementary school, he already did figures from the fourth grade. From then on, he kept doing the figures of a higher grade during elementary school. The fact that Ad is good at reasoning became clear when he was in fifth grade. "Ad thought he would have to go to a secondary school in the neighbourhood for mathematics, when he would be in sixth grade." Luckily for Ad, he got to do another assignment. His talent for mathematics does run in the family. Both Ad's father and mother like working with numbers. As mentioned before, Els used to do the administration of the store. Looking at econometrics, Johan prefers economics over mathematics. "I always took into account possible risks when doing business, the fact that mathematical formulas underlie these risks was less interesting to me."

Ad is like his father in more ways. Ad is a fighter, in a positive sense. Johan had to fight to get where he is today, especially with regard to his business. Ad and Johan also both like having company and a nice party; they like being where it all happens.

Any tips?
To conclude, we would like to hear if Johan has some tips for Ad for the future. "He should finish his studies. After his master in econometrics I might advice him to do a second master." To Johan, it is also important that Ad experiences as much as possible and sees a lot of the world.

Text by: Elske Leenaars

BUSINESS

INTERVIEW CBS

The Interesting Statistics

The subway brought two Nekst editors to Leidschenveen, The Hague. From the subway station you had a good view on the large building of the CBS. A bridge across the street brought us to the front door and after we got visitor passes we waited in some comfortable chairs. Soon a cheerful looking lady came to pick us up, Nathaly Carolina.

Name:
Nathaly Carolina

Age:
25

Position:
Methodologist

First we had to go through the security. Nathaly told us stories about people who had to go through the security a couple of times in a row, before being able to enter the building. Fortunately we all got through in one try. Walking to the room where we held this interview, we saw the nice atmosphere at the CBS. All the rooms were open, no doors were closed. When we were about to reserve the room, a colleague of Nathaly saw this and beat us to it. Fortunately he had no intention of using it, so we could do our interview there.

The CBS

The letters CBS stands for 'Centraal Bureau voor de Statistiek', which in English translates to Statistics Netherlands (SN). SN is responsible for collecting and processing data in order to publish statistics to be used in practice, by policymakers and for scientific research. To produce good statistics for specific fields, you need people from these fields. Otherwise you do not know what the statistics tells you and whether they are logical. For this reason people with all kinds of backgrounds work at the CBS: psychologists, biologists, economists, and so on. There are, of course, a lot of nice statistics about the CBS itself. For example, the CBS has buildings on two locations: Heerlen and The Hague. It has 2350 employees, of which 1174 are settled in Den Haag. 894 of the employees of the CBS are female and 48 employees are econometricians, of which Nathaly Carolina is one. She works as a methodologist at the CBS.

The Employee

Nathaly Carolina was born in Curaçao, almost 26 years ago. How did she end up so far away from home? As a child, Nathaly wanted to become a teacher in mathematics. "When I was in primary school, I wanted to teach mathematics in primary school. When I went to secondary school, I wanted to teach mathematics over there. When I finally went to university, I wanted to teach mathematics at a university." When she grew older, however, she thought that the Mathematics programme would be too one-sided and not good enough of a foundation for when she decides to go back home. So she decided to study econometrics instead. Her mother encouraged her to carry out her plans. "Without her I think I would not have gone to the Netherlands," Nathaly says. Nathaly finished her bachelor in econometrics in Maastricht. During her bachelor, she also went to Spain for six months to study mathematical finance and technical mathematics. When she came back to the Netherlands, she did her master in Rotterdam. For her master thesis and while working in the actuarial field, she had to 'go home' to Curaçao and Aruba, to do a research on the life-expectancy of the population over there. She did this in collaboration with the former the CBS of the Netherlands Antilles. ''I really liked the research, and its social relevance." She liked it so much that she decided to apply for a job at the CBS and at the CPB - the 'Centraal Planbureau', translated to English 'Netherlands Bureau for Economic Policy Analysis' -. The CPB does approximately the same kind of research as the CBS. After the interviews, Nathaly decided to work at the CBS, because of its open and informal structure.

Methodology

Nathaly works as a methodologist at the CBS. What do methodologists actually do at the CBS? "We analyse and develop a set or system of statistical methods, principles and rules for the production of statistics. To be more precise, we do methodological research and build the mathematical models on which the statistics of the CBS are based. Furthermore, we give advice to the other departments, so that

they can produce the right numbers." An important role of methodologists is to translate a complex statistical model into something that is easier to understand. "It is very important to know how to interpret the numbers. Otherwise you could make policies that are not reliable."

Nathaly has already done several projects at the CBS. She first worked on a project called RISQ (Representativity Indicators for Survey Quality) for six months. "When you do a survey, you usually do not receive a response from everybody. These indicators, called Representativity indicators or R-indicators, tell us how representative this response is for the whole population." The project itself took about two years.

"Now I am working on business cycle analysis. Last year I worked on a project about estimating unregistered populations in the Netherlands. I have worked on unemployment data, survival analysis and a lot of other projects." The projects you can work on here are very diverse. "That is what makes working at the CBS so much fun'," according to Nathaly.

"Normally I work on two or three projects simultaneously. I do this five days a week, 40 hours in total. All projects are different. Some are short, others span a longer time: sometimes they last three weeks up to three months, whereas other projects span two to three years. You can work on both types of projects at the same time though."

Working at the CBS

It is very challenging working at the CBS. All the models you make, all the output you produce, are used by important agencies. Every model you create has to be completely correct. When a model is finished, before sending it out to the production department, a senior methodologist will review it.

At the CBS there are many fields for which you produce output. You work with people from these fields and you can also learn from them. You can learn how to use a model from biology in econometrics. You also can see how the models you build are applied in the 'real world'. These are things you do not learn in depth at the university, where the focus is more on the theoretical side. The practical use and purpose of all the models and formulas that you learn at the university is not always clear then.

"The CBS really invests in the education of its employees. You can go to conferences, do many courses, do a PhD and you can write scientific papers. These opportunities are greatly present at the CBS. The CBS stimulates its employees to do such things."

There is a lot of sociability among the colleagues. They often have lunch together. "Once we had a pie-week. Every day a woman from the department baked a pie. This was really fun, because cooking is a big hobby of mine." There are a lot of drinks as well. After a project is finished, there is a drink and there is also the CBS summerparty. Besides the drinks, there are other fun activities as well! "Last Monday there was an après-ski party. You could go skiing and afterwards go to the party. Debates are also organised. I also know colleagues who had a workshop on making chocolates!"

Tip

Nathaly has a tip for every econometrics student. "Do not stay in your own 'econometrician' world. Look at other fields of the science. You can learn a lot from them! When you have finished your study, do not stop studying. Keep reading papers and keep up with the latest developments. Econometrics is developing very fast lately!"

Text by: Marlies Veenes

CBS

Broadening Your Horizon

ASSET CHRISTMAS GALA

On Thursday 2 December, the Asset Christmas Gala would take place and after one of my Linear Optimisation classes I bought a ticket. I think it is good for a Chinese student to combine their studies with some fun. For a foreign student especially, it is important to broaden their horizon on some occasions.

On the day of the gala it was really snowy, and I also had to wear high heels while walking to the gala. This was not very convenient nor comfortable as there is a long distance between the gala and the bus stop and there was a lot of snow. I almost fell because I was worried I would not be on time, but after arriving there were only three people there, none of which I knew. You could say I was really on time.

The place where the gala took place, Villa de Vier Jaargetijden, looked very beautiful and romantic with the candles inside and the snow outside. It was really nice that there were two photographers at the entrance to take pictures of everyone who liked that. The music that was played was of many different styles and some of these styles were good for dancing; some songs were more elegant. The band that played live music was a great addition to the gala, as they played very well.

After having waited for a while, more and more people arrived and one of them, Fang Qi Wu, was also wearing a dress that was red, just like mine. It was very funny that two of the Chinese girls happened to wear a dress of the same colour. There were many econometricians present who liked dancing a lot and I really enjoyed dancing with them. I also have to admit that Fang Qi is a really good dancer! She had enough energy to dance until the party had to stop at two o'clock. I had a great evening and it seemed to me that most people enjoyed the party very much. Unfortunately the party ended much too soon, as everyone was still enjoying it very much when the lights turned on. I, for one, had a great evening there and I will also go to the gala next year.

This was the second time in my life I went to a gala. The first time that I went to a gala was on the high school graduation day when I was still living in China. However, I liked the Asset Christmas Gala in 2010 more, as it was more official than at my high school. Frankly, I think that always studying at home or at the library is really boring for a foreign student. Everyone should go party every now and then to relax themselves and also broaden their horizon. The most important thing is that networks should be built during your time at the university by visiting social activities, which are important for your future.

Name:
Xuan Yang

Age:
22

Begin Studies:
2010

An Automotive Spare Parts Distribution Network

SCIENTIFIC ARTICLE

DISTRICON

Name:
Sander van Lokven

Position:
Consultant

Name:
Yvonne Blom

Position:
Consultant

In defining the structure of a distribution network, often several optimisation challenges are faced which cannot be handled simultaneously. For this case, we need to define the number and size of several depots in a distribution network. At the same time, optimal routes to customers should be determined based on specific service requirements.

This type of problem requires a combined approach of network optimisation and route planning.

The approach described in this article is based on a case in the automotive industry. Car dealers are either brand-specific or non-brand-specific. Currently, spare parts for non-brand-specific dealers are delivered from the nearest brand-specific dealer. One of the Dutch traders in this sector considers restructuring this distribution network, by delivering the non-brand-specific dealers directly using a dedicated network. Depot locations are to be defined for storage of spare parts and act as starting location of distribution routes. All depots are replenished from one central distribution centre.

Three-Phase Approach

Districon Management Consultants supported the company in defining the optimal network structure. The approach consists of three phases. The first phase is the network optimisation part. Given a certain range for the number of depots, the geographical location of the depots is determined and each dealer is assigned to a depot, based on their relative location. The second phase is the route optimisation, given a number of depots, their location and assigned dealers. Roundtrips are planned based on four different commercial scenarios on service requirements. In the third phase, the cost for each scenario is calculated in order to compare the results. Using the so called 'bathtub curve', the outcome of different decisions in the network design becomes transparent.

Phase 1- Network Design

A network design model is set up to determine the optimal place for a given number of depot locations. In addition, the model assigns flows from the depots to the dealer locations.
The input for the network design is: 1800 dealer locations (clients c), 800 possible depot locations (depots d), distance from c to d and the demand per dealer location. The possible depot locations are x and y coordinates evenly spread over the country. The number N is the variable for the number of depot locations to open.

The model objective is minimisation of the weighted distance from the N depots to the dealer locations. The binary variable DepotOpen indicates whether a depot is open (1) or not (0). The MIP model is:

$$\min TotalDistance = \sum_{c,d} Distance_{cd} \cdot Flow_{cd}$$

$$s.t. Demand_c = \sum_{d} Flow_{cd} \quad for\ all\ c$$

$$\sum_{d} DepotOpen_d = N$$

$$\sum_{c} Flow_{cd} > 0 \ for\ all\ d\ with\ DepotOpen = 1$$

$$\sum_{c} Flow_{cd} = 0 \ for\ all\ d\ with\ DepotOpen = 0$$

This model was calculated over the input data for a range of values for N. The output is the depot locations (with X and Y coordinates) that are open and the assignment of client demand to depots. This information is used in the next phase, the route optimisation. The maps in Figure 1 show the depot locations and assigned dealer locations for N equal to 6, 9 and 12.

The minimum number of depots for which the model is calculated, is such that the approved service times to the clients are secured. Typical market needs are lead times between 1 and 3 hours.

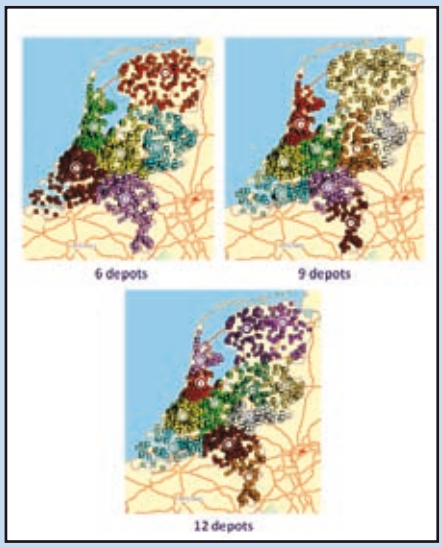


Figure 1: Depot locations and client assignment for three values of N

Phase 2 – Route Optimisation

Roundtrips start and end at a depot and visit a number of dealers. A truck can make more than one roundtrip during a day. The routes and truck usage depend on specific service requirements that are defined in commercial scenarios.

Commercial scenarios are defined based on two variable components of service requirements. One of the variable components is order lead time. Order lead time is defined as the time between order placement by the dealer and delivery. It is the aggregated time needed for order picking, transport preparation and driving time within the trip. Another variable is the maximum number of times a day a client can place an order. An example of four commercial scenarios is shown in Figure 2.

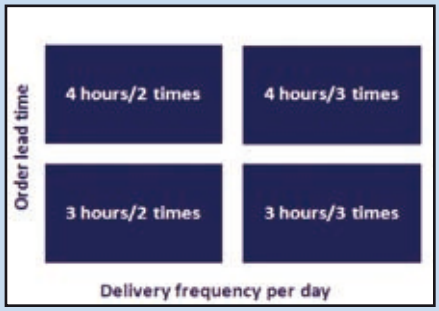


Figure 2: Four commercial scenarios

Based on historical order patterns, distribution routes to all clients are planned for each scenario. The length of the routes and the truck type that can be used depend on both variables. Longer order lead times will lead to longer trips with more volume, using a larger truck. Distribution becomes more efficient in this way, so the total distribution cost will decrease. Increasing the number of deliveries per day has a negative effect on the distribution cost. More trips will then be needed to deliver the full demand.

Phase 3: Scenario Results

The total network cost is determined by minimising the total cost per commercial scenario. The cost drivers are defined as follows:

- Supply: distance, truck loads and kilometre rates
- Inventory: interest rate, inventory level
- Housing: all-in rent per m^2
- Personnel: logistics personnel, planner and team leader per location
- Distribution: cost price model with all-in hourly rates

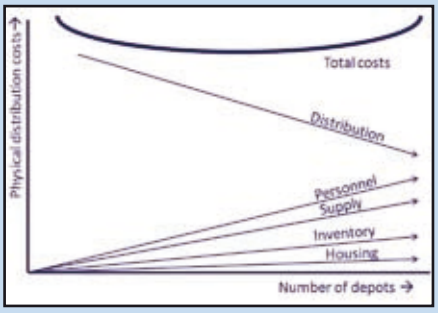


Figure 3: Bathtub curve

Cost of supply is increasing with the number of depots. More depot locations lead to a longer total travel distance from the central distribution centre and less efficient truck loads. The overall level of inventory will also increase, while retaining the same availability of products.

When keeping stock for a bigger area, more risk can be combined with a lower level of inventory. The "fixed" housing and personnel cost is related to the number of depot locations as well. All relations between the number of depots and corresponding cost are shown in the bathtub curve in Figure 3.

Conclusion

The total cost line shows the total network cost given a number of depot locations, visualised in the bathtub curve. As the curve shows, lowest cost is acquired in the middle of the graph. The slope of the line indicates the degree of freedom the decision maker has. A flat line indicates that using more or fewer depots than the optimal value, has only a minor influence on the total cost. In practice, the distribution structure (the number of depots with its calculated assignment of dealer locations) will be chosen within the middle, lower part of the graph. The final choice also depends on practical issues such as availability of space or organisational issues.

ASSET

Promotion

Freshmen

Ne

Book of Faces

Finance Symposium

Board Asset |

Education

Introduction Activity

International Business Tour

Econometrics

Econometric Challenge
Tilburg

ekst

Drinks & Activities

Orientation & Information Day

Econometrics

Active Members Weekend

(Active) Members Day

Economic Business Week Tilburg

Finance Expedition

Meeting Effectively for Three Hours

ACTIVE MEMBERS TRAINING

On Thursday 27 January, the active members training took place. During this afternoon about fifty active members of our association, from nearly all committees, participated in one of the following three trainings: communication, negotiation and meeting effectively. Read on to find out what we learned.

Name:
Emy van der Wielen

Age:
21

Begin Studies:
2007

The afternoon started with a lunch in CZ6 with all participants. It was nice to see that a big part of the active members were present and wanted to learn more about skills which can come in handy during meetings and also in other situations.

After a delicious lunch, the group was divided in three subgroups which were going to attend one of the three trainings. The three trainings which were offered were communication, negotiation and meeting effectively. I participated in the last one.

First of all, the trainer started with an introduction round in which we had to tell our name, function and how we behaved during a meeting. It appeared that all kinds of participants were present: members who are overly present during meetings, members who are creative and members who think a lot before they give advanced input to a meeting. Luckily, the trainer knew how to handle such a varied group.

After the introduction we did a role-playing game in which everybody received one proposition which was part of a bigger problem. The goal was to answer one question by combining all the propositions in a good way. Thijs Verhaegh took the position of the secretary and noted all useful information. Bart van Schuppen took his chairman position, also in this kind of meeting to make it a pleasant and "effective" meeting. The trainer remarked that it was very good that we did not interrupt one another.

After this game, the trainer gave us more information about how to make an agenda for a meeting and gave us an explanation about each agenda item. She also told us about the difference between APPF (Any Points Put Forward) and AOB (Any Other Business) and in which order the items are usually put.

Some of us would like to know how to convince other members of their committee. The trainer asked us to write down a proposition and to hold an argumentation about that topic to convince the others of our opinion. It turned out to be rather difficult to argue in a good way. The trainer gave us the hint to ask the question "why is my statement true?" after each question to end up with a more general statement. Then you could start with this general statement to argue just the other way around and end up with your own proposition.

After two hours of intensively thinking and listening, we had a little break with coffee, tea and delicious Dutch apple turnovers, which brought us new energy for the following hour. The trainer continued after the break by telling us more about "ratten", a manner that many people apply to convince others in a tricky way. You can see it, for instance, in debates on television when the counterparty refers to personal settings of the arguer or wants to deter from the current subject by giving a statement which is not connected to the current topic. The trainer split the group in two parts and we had to apply and recognise when someone tried to "rat" alternatively. Sometimes it was difficult to recognise and react well to someone's attempt to deduct from the essence of the discussion.

After three hours with a lot of information, the training came to an end. I can conclude that it was a very instructive and nice afternoon and, in the future I would certainly use some of the tips I was taught during this training.

Puzzle Your Way Out

COMMITTEE PROFILE

This is the slogan of a brand new event, named the Econometric Challenge Tilburg (ECT in short). The ECT will be organised for the very first time in the history of Asset | Econometrics. To make this a day people will remember for a long time I would like to introduce the committee, and tell you what they have been up to till now.

It all started in the beginning of September 2010 when the active member interviews took place. Since it is a new activity, the ECT needed new committee members. Amongst all future active members, four lucky ones were chosen. These four lucky ones form, together with two board members, the ECT committee. Their task is to make this day to a success.

During our first meeting the positions in the committee were divided. Thomas Geelen is the one leading this committee, as he is the chairman. With his experience in other committees, Thomas is the right guy for this job. A good and quick writer is needed for the position of secretary and Joep Olde Juninck is the man with these skills. If you are a secretary and in need of a secret word, do not hesitate to contact Joep, because this man is an expert on secret words. It is best to have a smooth talker for the position of external affairs. Who is more suitable for this position than Robbert van Oosten? He has a chill mentality which is in his advantage when contacting companies. The general member of this committee is a person from the board, her name is Claudia. She has experience in organizing events like these and with that knowledge she is very helpful to us. The same holds for Elske, who is the coordinator from the board. If there are new things that we have to take into account they know it. Last but not least there is the position of treasurer. Yours truly is the one for that position. With all my excel skills it should not be a problem to bring everything to a good end.

I guess you probably all wonder what the ECT is. The ECT is in fact a case day, on which participants try to solve a case and the best group wins a prize. During the ECT two cases, related to econometric knowledge, will be provided by two companies. One case will relate to the field of Operations Research and Management Science, whereas the other case will relate to the field of Quantitative Finance and Actuarial Sciences. Both cases will last the entire day, which is about five hours. The ECT is meant for econometrics students at Tilburg University who have followed the introductory courses for these two fields. This ensures that all participating students have sufficient background knowledge. Interested students can subscribe in teams of three persons.

Before all of this can take place, however, a lot of things have to be taken care of. Up until now the location has been arranged: it will be held at De Harmonie in Tilburg. One of the most important things to arrange is the participating companies. I am proud to tell you that OC&C will give the case in the field of QFAS. Right now the committee is working hard to arrange the second company. Once the companies have been arranged we can print our promotion material and launch the website. Therefore, we hope to do so soon.

I hope that you now have a good idea of what the ECT is and I hope to see you on 3 May.

Name:
Pascal Heuijerjans

Age:
23

Begin Studies:
2006

Optimal Timing of Derivative Trades[1]

The study of optimal timing of derivative trades is motivated by advances in the trading infrastructure over the past decade. Until several years ago, most investors were only allowed to trade through a broker, an economic agent acting as an intermediary between the investor and the market maker who issues quotes.

Name:
Thijs van der Heijden

Position:
PhD-student

This would involve calling a broker for a quote or submitting a limit order, a task that would cost relatively much time. Nowadays however, screen trading applications provide direct access to electronic trading platforms, enabling investors to directly submit orders to the limit order book. Hence, they can trade (nearly) instantaneously.

As trading has become much faster, one can ask the question how to make use of this additional flexibility. Many portfolios of mutual funds are still managed on a daily basis, which usually means that at the beginning of the day the optimal portfolio holdings will be updated using yesterday's financial data and the in- and outflows. If the optimal holdings differ from the current holdings, then trading may be necessary somewhere in the course of the day.

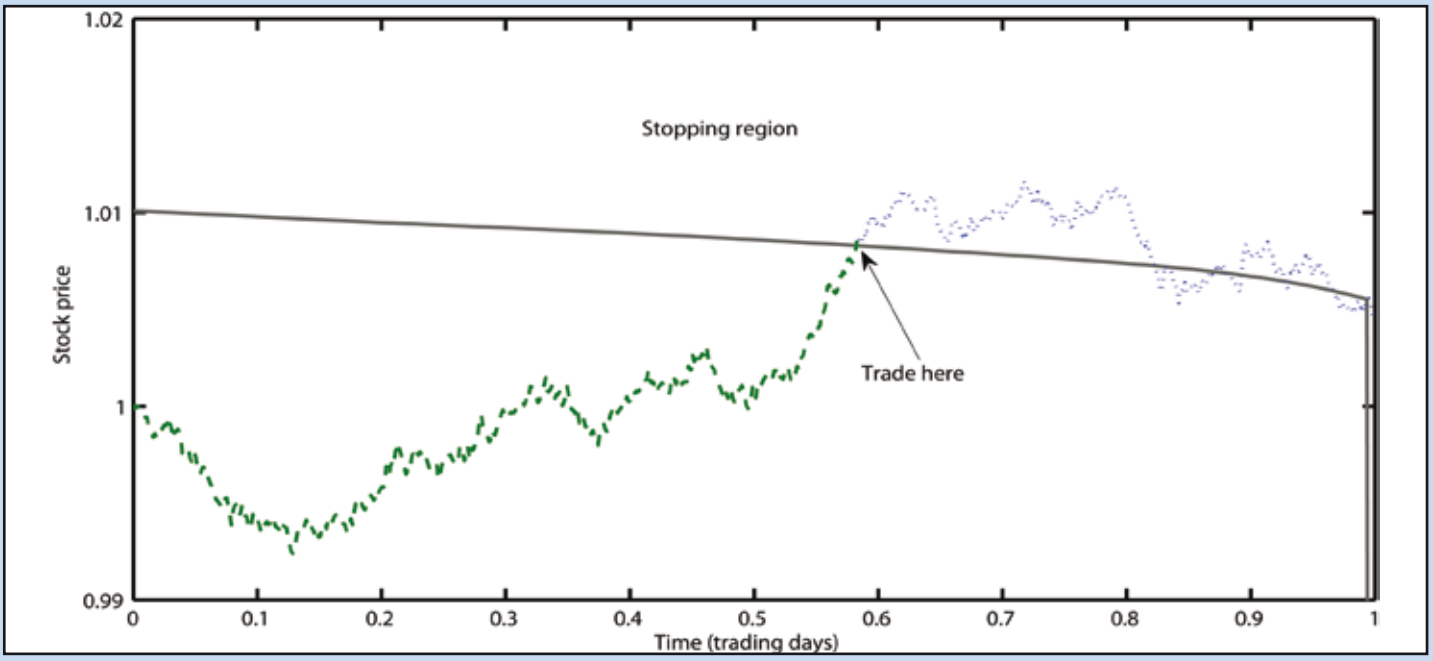
It is not immediately obvious, however, what point in time – if any – would be the best to trade at in order to minimise the present value of the total expected cost of the portfolio. The existing literature is of little help in this respect. The current paper partially fills this gap in the literature; it aims at finding the optimal point to trade, in the context of trading a portfolio of derivatives on a single underlying asset in a world without price impact[2].

The main contribution of the current paper is to show the value of being flexible in choosing the moment to trade within a period of time for a portfolio of derivative securities, when the prices of these securities in the portfolio are non-monotonic functions of the value of an underlying asset. Such securities can easily be constructed by combining several plain vanilla put and call options and restricting them to be traded simultaneously. An agent trading a portfolio consisting of such baskets of plain vanilla options in a Black-Scholes pricing world, can obtain substantial expected gains – up to several hundreds of basis points a day[3] – compared to trading at the quotes of the opening or the closing of the market, or an exogenously given random time.

Portfolios consisting of a single plain vanilla option or the stock itself constitute a special case. They should be traded either at the beginning or at the end of the allowed period. The intuition behind this result is that the stock price is expected to rise over time and the price of the plain vanilla options is a monotonic function of the stock price itself. For example, the price of a call option is increasing in the stock price, so buying a call would optimally be done at the start of the trading period.

When you trade baskets of options of which the price is a non-monotonic function of the stock price, a simple analytic solution to the optimal trading problem cannot be found. A dynamic programming algorithm can be used to determine the optimal level of the stock price for which to trade immediately as a function of time though.

An example of a setting where the dynamic programming model can be used, is trading a straddle position, which consists of a put and a call option having the same exercise price and maturity date. The empirical section of the paper focuses on buying such a straddle with a short time-to-maturity and which is at-the-money[4]. The sample consists of tick level data on the S&P500 index options for 216 trading days in 2007. The optimized strategy performs better than the opening and closing strategy on 63% and 92% of the days, respectively, and yields cost savings of 59 and 40 basis points.



The results are robust to different assumptions about the volatility and risk free rate parameters. Moreover, the optimized strategy outperforms a strategy that randomly picks some points in time at which to conduct the trade.

Model

The starting point of our analysis is a single, price-taking agent seeking to hold at time T_0 a given portfolio (H) of contingent claims on a single underlying asset. The portfolio H describes the holdings (h_i) of the different contingent claims, which we index by i = 1,…,I. The ordering of the claims in the portfolio is such that in the i^{th} trade, the holding h_i is traded. The price of a claim of type i, denoted by S_{it}, is a function of calendar time t, the value of the underlying asset S_t and characteristics specific to claim i: $S_{it} = f_i(S_t,t)$. For example, if claim i is a plain vanilla option, its characteristics are the expiration time T_i, the strike price K_i, the exercise style (European or American) and whether it is a call or a put option.

The agent, assumed to be risk neutral, aims to minimize the expected value of the cost of obtaining the prescribed holdings, under the assumption that his trading does not affect the market price of the contingent claims. He achieves this aim by choosing, in a smart way, the set of times $(\tau_i)\_(i=1,\ldots,I)$ at which to trade. In mathematical terms, the problem to be solved by the agent is

$$V = \min_{0\le\tau_1\le\tau_2\le\cdots\le\tau_I\le T_0} E\left\{\sum_{i=1}^{I} h_i\left(\exp(-r\,\tau_i)S_{i,\tau_i} - S_{i,0}\right)\right\},$$

in which r is the risk free rate, which we assume to be constant. In words, the equation says that, at time τ_i, the agent trades h_i units of claim i and adds h_i times the difference between the actual discounted cost $\exp(-r\,\tau_i)\,S_{(i,\tau\_i)}$ and the time-0 cost $S_{(i,0)}$ to the total cost.

In order to solve the problem in equation (1), the stock price is assumed to evolve on a binomial tree. At each node in the tree, the optimal trading strategy can be found by comparing the difference in cost between trading one or more of the claims immediately or defer trading of all claims for at least one more period. At the final time T_0, all remaining claims have to be traded. Therefore, it is straightforward to calculate the additional cost at time T_0 as a function of the number of claims that had been traded before time T_0 already, say M, where M varies between 0 and I.

Going one step back in the tree, for each value of M, the agent can trade either 0 or 1 or up to I-M remaining claims. In order to determine the optimal number of claims to trade immediately, the agent compares the current price (an expectation under the risk neutral probability measure Q) to the expected value of deferring trading for at least one more time step. At the pre-last time-step, this expected value is just the present value of the expectation under the objective measure of the price next period.

Districon

Working backwards through the tree then yields the optimal action at each point in time. For the portfolio consisting of a single straddle, the output of the algorithm is a function that, for each moment in time, determines the minimum value of the stock price for which it is optimal to buy the straddle immediately, indicated by the solid line in the figure.
The figure also shows a possible realization of the stock price over the day, in green (dashed) until the moment it hits the solid line and in blue (dotted) thereafter. The crossing point marks the optimal value of the stock price to trade the straddle.

Buying an S&P500 Straddle

The final section of this report considers the ultimate test of the model developed in the previous section, being to test it using market data. The tick level data on exchange-traded S&P500 index options as provided by the Chicago Board Options Exchange (CBOE) are particularly suited for this task, because of their large trading volume.

On each of the 216 days in the sample, which runs from January till December 2007, a straddle is bought with moneyness equal to 1.01 and maturity between two and six weeks. The price that results when following the optimized strategy as described above is compared to trading at either the opening or closing quotes of the day as these are natural trading points with relatively high trading intensity compared to the remainder of the trading day.

While the optimized strategy does at least as well as the three alternatives on 63% (open), 92% (close) and 61% (random) of the days in the sample, only the cost savings of 40 basis points compared to the close are significantly different from zero (standard error 12 basis points). The dispersion in gains is really large, with differences in realized prices of up to 80% between the different strategies on some days in the sample.

Concluding, it seems that there may be some value to trading baskets of options by a structured approach such as the one advocated here. The empirical results, however, point out the large variability of day-to-day results which renders the expected gains not significantly different from zero in most cases.

[1]This article is based on joint work with Feike C. Drost and Bas J.M. Werker.

[2]When selling a large number of shares, price impact is defined as the discount on the current market price of the stock you would have to provide to potential buyers, in order to induce them to buy the shares within a short period of time.

[3]A basis point is 1/100 of a percent.

[4]"at-the-money" means here that the ratio of the exercise price of the options over the discounted index level at the start of the day, is closest to 1.01.

The Famous Neighbours

On one of the loveliest afternoons of this year, I cycled from Tilburg University to the city centre. Marlies and I were about to join second year student Fleur van der Heiden for dinner, check out her very lovely room and ask her everything about living in lodges.

Name:
Fleur van der Heiden

Age:
20

Begin Studies:
2009

Marlies awaited me at the Noordstraat, pretty close to Villa de Vier Jaargetijden, the lovely mansion in the city of Tilburg. Fleur actually lives in a very small street called 'Burgerijpad', a bystreet of the Noordstraat. Actually a very good location, right in the very centre of town and still relatively quiet.
We were welcomed with a very enthusiastic 'please come in' from Fleur, and entered the kitchen, which was remarkably new and clean. According to Fleur this is definitely a good thing, as she likes cooking. As I found out later, the 'World Kitchen Burritos' we were about to enjoy, is one of her favourite dishes. They are quite famous, since Marlies and I were certainly not the first econometricians that have had the pleasure of having them. Another great source of inspiration is the collection of small recipe cards from Albert Heijn, a thing Fleur has in common with me and loads of other students. The credits for the clean kitchen probably go to the dishwasher, which Fleur likes most about her house.

Living in lodges was not much of a choice for Fleur since her parents live in Doetinchem, which is too far away to travel to Tilburg daily. Although Fleur likes living in lodges, she visits her parents regularly. "I like organising things like cooking and such on weekdays, but I also really like the fact that, when I stay at my parents', my mother really spoils me". Fleur used to play field hockey in Doetinchem, but quit the year after she moved to Tilburg. "I played field hockey at a very decent level and it is hard to keep that up when you are

living in lodges. That was kind of a pity, but it was the best thing to do." Fleur meets her friends from Doetinchem every now and then, sometimes in Doetinchem, but also in their new hometowns like Tilburg and Nijmegen.

Studying Econometrics

She was sure that she wanted to study econometrics and she liked the smaller and more hospitable student life of Tilburg in favour of the massive student population in Amsterdam. Although her room is nice and quiet, during exam periods, Fleur usually prefers the library as her study place. This is because she finds it easier to concentrate and really get active in studying. She also really likes cooperating with her fellow econometricians and discussing the material. Speaking of studying, she was in the same class as Marlies in secondary school, so I got some details about their former teachers and some real Doetinchem gossip.

Painting the Dishes

Fleur's room is situated in the loft of the house, and is quite different from other dorms. The room is rectangular and is approximately 9 x 2.5 meters and, as a result, her room looks quite bright and cosy. She likes flowers and bright happy colours such as pink and red, and thus she adores the famous series of Blond crockery(like almost all Dutch girls nowadays). Her bedding is typically 'Fleur' since this has the same bright red and pink colours. She even paints her own dishes, a bit in the same style. Some furniture looks kind of familiar to me, and Fleur admits that she, like all students, went to the furniture supermarket of IKEA. When Fleur came to Tilburg she got her room via Kamernet, the best known Dutch website for finding a room in several student cities. Since her landlord started rebuilding the house, she had to move to the current location.

She now lives together with two other students, a girl who studies pharmacology and a guy who does not study at all. Fleur regularly eats together with the girl and that all goes in a really relaxed way. Since the house is kind of old, they sometimes irritate each other with loud music, but that is usually solved by sending a text message. They do not have a specific cleaning schedule, but if the shower or the kitchen gets dirty, somebody cleans it and the other students clean something else. This is probably functioning well, because there are only three people in the house: Fleur notes that in her old house, where she had more housemates, this system was more susceptible to fraud.

Being Active

Of course, studying is time consuming, but having a nice time in Tilburg is perhaps even more important. Fleur spends her free time playing tennis and visiting activities organised by Lacoste, the tennis association for students. She noted that she grew more responsible since she finished high school. "I once aided the board of Lacoste for one week, when some people were away, and I noticed that I really wanted to do my tasks very well and that I was thinking about them very often." Besides the fact that Lacoste offers fun activities she also likes it because playing sports often naturally helps one to stay healthy.

Famous Neighbours

Apart from the fact that Fleur's house is nicely situated, close to the city centre and not too busy or noisy, etc., it is nice in another way. Marc-Marie Huybregts, a Dutch stage performer and regular host in the popular talk show DWDD, is her neighbour and Fleur once met him when she took out the trash. The same holds true for Dutch singer Guus Meeuwis, who visited one of the drinks this year. He regularly takes his kids to school, which is almost in Fleur's backyard.

Altogether we had a great evening, it was fun and Fleur prepared a delicious meal. I learned a lot about 'girlish' things and picked up some tips about getting personal with celebrities.

Text by: Pieter Platteel

NATIONAL ECONOMETRICANS DAY

Interesting companies visited during the LED

On 15 February, it was again time for the largest carrier event for econometricians in the Netherlands, as the National Econometricians Day (LED) took place. On this day, students from all over the country have the opportunity to get in touch with different companies in various ways.

Name:
Harmen Boersma

Age:
22

Begin Studies:
2007

In the morning, we arrived at the World Trade Center of Rotterdam. At that moment, many econometricians from the other cities were already present. We had time to drink a cup of coffee before the opening speech by Professor Philip-Hans Franses started. He spoke about the use of econometric forecasts. Apparently most sales managers make small changes in econometric forecasts and the strange thing about these changes is that they are often better than the original forecasts. The professor did research on this topic and advised a few companies on how to handle these changes.

After the opening lecture we had our first case round. During this different cases, from companies in all kinds of fields of econometrics, are presented. At the subscription we had already given our preferences for both cases. My first case was at the Boston Consultancy Group (BCG), where we had to give an advice about taking over one or more competitors. Although we chose one of the three companies as a good take over, the final result was that the company should first improve their own cost benefit level. When the first case round ended, we had a really nice lunch. During this lunch we all discussed our cases and I even got some advice for my afternoon case from people who already attended that case during the first round.

After lunch it was time for the second case round. This time I attended the case by TNO. We had to negotiate about how to improve the position of electric cars in the market. To manage this, the concerning company must sell enough electric cars and there should be possibilities for owners of electric cars to recharge them. I had to play the role of electric supplier and could set a price for the energy delivered. Although I got some advice before the case started, I did not perform very well in my function and as a group.

When this case also had finished there was not much time to discuss our experiences. There was already a new speaker waiting to perform. This time it was not a lecturer, but a comedian, Gregory Shapiro. As an "American Nederlander" he gave some insight in the Dutch habits and culture. In his show he spoke about the integration exam and the Dutch language. There seem to be many strange questions in the exam and I could not answer them correctly, despite being Dutch.

The intermezzo was finished and we had our next activity. There was a drink and an information market. While drinking a beer we could visit companies of which we did not do a case or those that we wanted to know more about. This information market is often a very nice part of the day, because you have the possibility to see many interesting companies in a short time and can ask about their possibilities for internships and starting opportunities.

The end of the formal part of the day was a recruitment dinner. For this dinner all tables were divided among the companies and most students were appointed to one of the companies. I joined the table of OM Partners, so while enjoying your food you had the opportunity to talk to one of the employees from the company. The dinner was the last of the formal activities and many econometricians went home afterwards.

The econometricians who would not go home yet could go to the party. Of course, I did not want to go home yet and went to the party after we changed our clothes in the hotel. The party was a nice end of an interesting day.

Although we missed our breakfast the next morning, I could say it was a very interesting and nice activity. I would like to thank the organisation of Econometrisch Dispuut for this day and I would recommend everyone to be part of next year's LED in Amsterdam.

Tilburg's Most Famous Liquor

On Friday 4 February, the Members Day of Asset | Econometrics took place. With about 50 students we went to the factory of Jonkers Distillers, where we had a look at how the famous Tilburg drink Schrobbelèr is made.

Early in the afternoon we gathered in front of Tilburg central station. After having a little trouble with the bus, as it appeared to be broken, we travelled with another bus and after 30 minutes, we reached our destination: Jonkers Distillers. We were welcomed with a cup of coffee in a nice room, which, because it had a bar in it, looked a little bit like a pub. Here, the director of the factory told us something about the history and the current situation of the factory and the products that are made there. Our activities in the factory consisted of three parts: first, a workshop about the ingredients of the drinks, after that a tour where we could really see how the drinks were made, and after that the most import part: the tasting of the different drinks.

The workshop was a kind of quiz. The director showed us pots containing the ingredients in their original form and by looking and smelling we had to guess what the ingredients were. After getting the right answers of the first round, we had to guess in the second round what distillate belonged to what ingredient. This was much harder than I expected, since the smells sometimes had changed a lot. After that the director wanted to show us that the recognition of a drink was about more than just the smell of it. So we had to smell different drinks which were all made colorless and also this turned out to be not so easy.

In the tour we were first shown around in the lab. This is the place where new products are developed. They also test samples of currently made products to see whether things, like their alcohol percentage, are right. Thereafter we went to the hall where the actual products were made. In this factory it is possible to make 2000 bottles of Schrobbelèr per hour. What we could also see was that most of the work was done by machines. We finished our tour along all other kinds of products like rum, vodka and coffee liquor. We saw bottles of Schrobbelèr which were made for export to foreign countries as well. At first I did not even recognize them, because they had a different name and the bottles were made of glass, which differs from the bottles used here. Finally we saw that it is possible to let the company produce a kind of liquor for yourself, which might be a good idea for Asset | Econometrics.

Then the real fun part could begin: the tasting. Everybody started with a glass of Schrobbelèr but after that everybody started trying all different kinds of drinks. Me and a friend of mine tried out the rum, but it did not taste so well. But since we did not want to throw it away we ordered a round of amaretto (which looked just like the rum) for the people standing around us. But what we did was, we filled an empty glass with rum and gave it to another friend of us. So he thought he had amaretto while he was actually having rum, so that was quite funny. It was also possible to make your own drink here. We finished the day with pasta or a pizza at an Italian restaurant in the centre of Tilburg so that nobody went home hungry on this well organised day.

Name:
Vincent Schothuis

Age:
21

Begin Studies:
2009

EXCHANGE REPORT

Studying in the Land of Opportunities

Sunny weather, tasty barbecues, big cars and… study books. Indeed, this is the story of studying in the southern part of the United States of America (USA); at the University of South Carolina to be precise. Reader discretion is advised though: this article may make you want to go on exchange too!

Name:
Emile van Elen

Age:
23

Begin Studies:
2006

Pre-departure

While studying for one of my Tilburg University Master's courses, a cold shiver crept down my spine. The feeling turned out to be a realization of the ugly truth that my days as a student were about to be counted. Therefore, I laid down my study books and started to reminisce about the "Good Ol' Days" as an undergraduate in the Econometrics programme. Amongst other memories, I recalled several conversations with fellow students who went on exchange and who all claimed that it "was an experience that changed their lives". Like Vickie Viking seeing the light I figured: "an exchange, this is it!"

I applied to one of Tilburg University's exchange partners, Moore School of Business at University of South Carolina[1], and before I knew it I boarded a US Airways plane that was headed to Columbia, South Carolina, home of the Moore School of Business.

South Carolina

South Carolina, famous for its Palmetto trees, is a conservative and religious state in the south east of the USA. Having only about 4.5 million inhabitants, the state houses a diverse cohort of learning institutions, most notably the University of South Carolina (USC). Over 27,000 students are enrolled on USC's Columbia campus alone, which

makes Columbia a town of students, really. The famous Five Points, for instance, is an interesting area with many clubs and bars where many students meet. Without need for further explanation, a place where one can regularly find me.

Everybody here in the South loves his car and hence busses, or public transportation in general, are a rarity. Everything down here is built for having a car. For instance, the nearest Walmart[2] is about 7 miles out, shopping malls are at least a one hour drive and a drive to the beach takes about 90 minutes. Also, there are special ATM or medicine drive-throughs. This made another Dutch girl, a French guy and me decide to buy a car together: a 3.8L V6 1995 Buick LeSabre (talking about being environmentally conscious). Still, I like to go to campus on foot, which is about a 20 minute walk from my student complex. By the way, the weather in South Carolina is very decent: at the time of writing (end of February) it is about 25 degrees Celsius.

Moore School of Business

Since I am enrolled in the graduate school (Master's level) my American classmates are substantially older than I am; varying from 26 to 40 (I guess). This is because many American students decide to go to work after completion of their undergrad (Bachelor's level) and only return to university after a couple of years. The main reason my classmates give for this is the high tuition fee[3].

It is funny that, when walking on campus, you can, quite often, clearly tell the difference between grad and undergrad students. Whereas the grad students are dressed more professionally, the undergrads wear caps, sneakers and propagate for their favorite Greek fraternity or sorority. I guess the exchange students are dressed somewhere in between.

The lectures are really interactive and it is expected of every student to be prepared for each class. This entails reading the assigned papers, looking over the PowerPoint slides and doing homework. Class participation is part of your grade, which results in basically every student asking (sometimes really silly) questions. Moreover, students are facing assignments and presentations that often will be graded. This way of teaching requires more time during the semester and forces you to keep up with the material. The good thing about all this is that the final exams are not so heavily weighted compared to those at Tilburg University; ranging from 0% to 40% in my case. In general, I would say that the classes are a little bit easier compared to the classes back in the Netherlands, especially when mathematics is involved.

Since USC has several remote sites throughout the state of South Carolina, some classes make use of what is called 'Distance Learning'. Basically, this comes down to lectures being streamed, real-time, over the Internet and students at the remote sites are encouraged to participate in the lecture as well by asking questions. Truly a peculiar sensation. USC allows me to take on four classes. From a list of several courses I chose Real Estate Finance, Global Equity Investments, Risk Management and Mergers & Acquisitions. Fortunately, I have classes on Monday, Tuesday and Wednesday only which leaves the rest of the week for travelling and sight-seeing.

Daily Life

Americans live in a country of extremes. To see this, consider the following example. On average, the health condition of European and American students is about the same. The striking difference, however, is the dispersion of this average. European students eat quite healthy and go to the gym every
now and then, so they stay healthy on average. American students, on the other hand, are either really fit and muscular or are rather corpulent. That is, on average they stay healthy as well[4]. This large dispersion is caused, first of all, by the lack of diversity of food. The university's dining hall, for instance, houses four restaurants: Burger King, Taco Bell, Pizza Hut and Chick-fil-A. Secondly then, there are those who go to the gym to compensate for this and those who do not, which also explains the

AEGON

large differences. The bulk of the students does go to the gym though, which brings us to the next topic, sports.

Sports in the USA are huge. Every student has free access to an impressive gym that includes four indoor basketball courts, countless fitness machines, an indoor running track and an in- and outdoor swimming pool. Throughout the entire campus, tennis, baseball, American football and soccer courts are at the students' disposal. Everybody wears shirts that read 'COCKS', which refers to USC's professional sporting teams, the Gamecocks. People who, for obvious reasons, do not know this (like me in the beginning) look really surprised when they see this for the first time. Together with a Venezuelan student I subscribed for the doubles competition of tennis, and we won our first exciting match after a tiebreak.

Besides playing sports, I play poker and Guitar Hero with a group of American students every now and then. Moreover, I often hang out with the other seven international students (from Finland, France and Holland) of the same exchange program. With them we have barbecues, parties and other relaxing stuff.

Noteworthy are the American house parties. I was invited to a house party by three girls who rented the house from a professor who was out of town for some time. The house rightly bears the nickname of 'The Mansion', as it is really large and comes with a nice pool. I do not want to say too much about it, but I hope for the prof he does not find out about the parties.

Trips

Since my schedule allows me to travel, I figured I might as well seize the opportunity. I found out that the southern part of the USA is a really nice area. Together with the seven other internationals I went to the city of Atlanta, GA. Amongst other things we went to a fancy club, the Coca-Cola museum and, on Martin Luther King Jr. (MLK) Day, we attended the official memorial service in the church were MLK himself has preached. We were really lucky to get in the church, since we were sitting on the very last bench. Many people watched the service outside of the church on a large screen or live on television. Together with the governor of Georgia, we were basically the only white people in the church. United States' attorney general, Eric Holder, also attended the service and gave an impressive speech.

So far, I have also seen the historic (for American standards) city of Charleston, SC. It is a really beautiful place where the American civil war started. There is a famous military college, The Citadel and the USS Yorktown, a Second World War aircraft carrier is stationed here. For an impression, see the movie 'Dear John', which was filmed here. Another nice city I have been to is Savannah, GA. It is comparable to Charleston and famous for the live oak trees. There is also an enormous outlet centre near Savannah, which resulted in the international students buying huge amounts of cloths for fire-sale prices.

What is to come? Tomorrow (at the day of writing) I am going on a hiking trip to the Linville Gorge Wilderness, also known as the Grand Canyon of North Carolina. Supposedly a very nice piece of nature. And after that? After that it is Spring Break, a week that American students unmistakable associate with relaxing and, indeed, partying. With the motto "get to know the culture" there is no way I am going to miss this. Therefore, we are going to take our Buick LeSabre to the beaches of … Miami!

Yes, dear readers, an exchange it is and this is the life of an exchange student. Like a real southerner would say: "Thank you for reading and see y'all later!"

[1]The Moore School of Business only accepts exchange students that hold a Bachelor degree.

[2]Walmart is a phenomenon, really. This super store sells everything: from food to car tires and from televisions to shotguns.

[3]The tuition fee of the program I am enrolled in, the International MBA program, is $68,805 for the academic year 2010-2011. Fortunately, the incoming exchange students (like me) pay the tuition fee of their home institution.

[4]Inspired by Professor John Einmahl's example of the average body temperature. If you ask him about this example, I am sure he will be more than willing to explain it to you.

'Beware: this article may make you want to go on exchange too!'

Outsmarting the Competition

BUSINESS

INTERVIEW

FLOW TRADERS

Would you not like to get a kick out of your job? To be able to see the results of your cleverly thought out moves directly? You might just find that at Flow Traders, whose headquarters are situated in our capital. Let us see what else this trading company has to offer.

Name:
Jori Kretzers

Age:
27

Position:
Trader

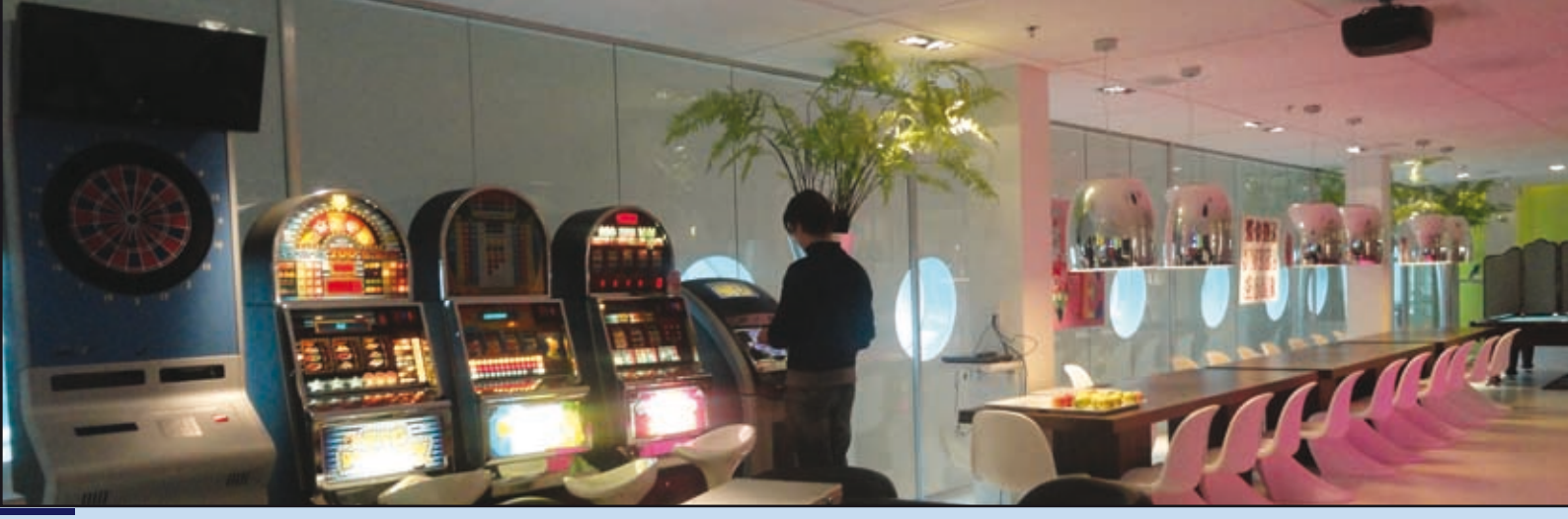
Being part of the modern INIT building - a building in which multiple companies can be found - the Flow Traders office looks great, as does the room in which this interview took place. Our interviewee is a young man, who introduces himself as Jori Kretzers. First, he tells us about how he ended up as a Flow Trader. "During my studies in Finance & Investments at the Rotterdam School of Management I went to a lot of recruitment and in-house activities. One of those activities was the in-house day here at Flow Traders. All I can say is that, by the end of the day, I was extremely enthusiastic about this firm, which was quite surprising, since I had my mind set on becoming a banker in a city like London. During my internship here in 2009 my feelings got reconfirmed and that was when I knew: this is what I want to do. I graduated in September of that same year with a thesis on commodities, and I was welcomed back here as a Junior Trader a month later."

Welcome to Flow Traders

So what do you actually do as a Flow Trader? As you might have guessed from the company's name, they trade. They do so by means of ETFs, Exchange-Traded Funds, which are funds that hold assets such as bonds, equities, commodities and currencies. "ETFs grew in popularity due to the lower expenses involved in comparison to the more traditional funds created by financial institutions. Nowadays, Flow Traders is the largest ETF Market Maker in Europe, which is quite impressive considering we only started seven years ago." Since you are responsible for a large amount of money, you begin your career at Flow Traders in the training programme. "The training, which takes place in small classes, consists of theory as well as practice and workshops given by senior colleagues." When we ask Jori whether the average finance knowledge of econometricians would be enough for a job as a trader, his answer is: "It definitely gives you a head start. But, even though I might have had an advantage over some others with my background in finance, others catch up quickly on the financial concepts that need to be grasped. I even have a colleague who studied agricultural technology before coming here. What is more important is that you are motivated and able to keep up with the pace". Once you finish the training, which takes a couple of months, you start trading and, after having been with Flow Traders for a year, you go into permanent employment.

Nine to Five?

Are we dealing with a nine to five job here? Actually, a day as a trader takes a bit longer. "I usually walk in at around half past seven in the morning. I start my day by checking the administration on the trades of the day before, which are processed overnight. I analyse the markets overnight in Asia and the U.S. and foresee events (e.g. company announcements, interest rates decisions or other news releases) that are expected during the day. Around nine o'clock most European markets open and trading begins." There is more to it than that though. You cannot stay on top without innovation. Therefore, another part of a traders' job is creating new strategies: coming up with new and better ways to make money. "The market, however, does not wait for us. You could say that, on an average day, we trade 80% of the time and we work on new projects for the other 20%. We have to watch the market continuously; so on some days we barely have time to work on new strategies, while on other days the market can be so 'calm' we trade only for 60% of our time. This goes on until the market closes, which is around half past five for most European markets. After that you do some administrative tasks or finish the project you have been working on. After closing-up, it is time for everyone to head to the



relaxation room, which is stacked with Xboxes, arcade games, a poker table and more fun stuff. It is great to catch up with some colleagues, whom I easily call friends just as well, and another hour flies by before heading home."

All in all, you do not spend too little time at Flow Traders, but that makes sense when working with a market that is, in fact, open twenty-four-seven: all markets intertwine globally, so there is a lot going on. "Our headquarters here in Amsterdam take care of the European markets, the office in Singapore looks after the Asian markets, and the one in New York handles matters in America. The latter will actually be my working place as of tomorrow!"

New York

For Jori, living in another country is nothing new, having lived in France and Australia with his parents, who are true expats. "I am used to travelling and even though my parents currently live in the Middle East, I have still seen them, on average, every two months for the last couple of years. I also spent a semester studying in California and I just came back from a vacation to Las Vegas and Los Angeles with a friend of mine, more or less to celebrate all the good things that came onto our paths since graduation. Going on vacation or having other appointments is not a big deal here at Flow Traders, by the way, as we accommodate by having a team-based approach to trading. Now back on topic, working abroad has always been on my mind. Hence, I applied for the position in New York when the opportunity arose. There are currently fifteen employees in the New York office, of which about half are specialized in IT, as in the other offices: in our field of work, every (sub-)millisecond counts which makes us heavily dependent on our technology to remain successful. The traders in New York have been to our Amsterdam offices for the training program and most of them have also worked for several years in Amsterdam. There are currently two Americans here in Amsterdam, who are following the training programme, only to head back to New York afterwards. Needless to say I am very excited to go to New York. It will be a new challenge where I can seek out new trading opportunities and continue to grow as a trader.

Why Work at Flow Traders?

So what is so great about being a Flow Trader? "The company continues to deliver exceptional performance compared to its peers. This is a direct result I believe from having an emphasis on our people and technology, as the company encourages teamwork, creativity, innovation and gives you lots of opportunities. It is also why I chose for Flow Traders. After researching its competitors in the Netherlands the factor that differentiates Flow from others are the people behind it. At Flow we have a flat and informal culture with only Dutch speaking traders, where knowledge is shared quickly and openly which makes vital information very accessible in a timely matter. I really hit it off with the team immediately: since working together is an important aspect of our job, it really helps. After all, everyone is here to do the same thing: helping the company improve. Earnings are not to be forgotten either and successes are being shared. Considering a good Flow trader can retire after ten years, but a real trader cannot be stopped. What is more exciting, however, is the kick trading gives and seeing the results of your work, which you achieved by outsmarting the competition. Amongst one another we are a little competitive as well, more or less as in sports. This is reflected in our approach to work, but of course also in the after-hours at the Xbox consoles!" Lastly, what happens though, when a trade does not go as planned? "Well, all you can do is learn from your mistakes, but then again, as Flow Traders, we usually tend to profit from others making mistakes."

Text by: Sander Vromen

Flow Traders

Beer After a Crisis

SYMPOSIUM & DRINK

The euro crisis, prominent speakers, professor Eijffinger as the chairman of the day, workshops, Asset | Econometrics and Asset | Economics: these were the ingredients for a successful symposium, that took place on Wednesday 23 February. Our minds got blown away by different answers to the question: 'Will the euro survive?'

Let me tell you something about the symposium. As I said, we were about to be blown away by interesting speakers. That is why the committee arranged a nice lunch to give us energy for the afternoon. At one o'clock everyone entered the auditorium. I give my compliments to the committee, since the auditorium was quite filled.
Bart van Schuppen, chairman of the organising committee, opened the symposium with a short welcome. Professor Eijffinger followed with his view on the euro crisis and introduced the first speaker: Jakob de Haan, who works at the De Nederlandsche Bank (the Dutch National Bank). He gave an impressive presentation about his view on the subject. The euro can survive, but only if some changes are met. His colleague at DNB, mister Sleijpen, entered the stage after him. He agreed with mister De Haan and emphasised sustainability in the eurozone. The last but certainly not the least to give a presentation was mister Boonstra, working at Rabobank Nederland. He had a lively presentation about the flaws of the eurozone.

Of course, a symposium is only complete if there is a panel discussion between the speakers. I immediately noticed that mister De Haan and Boonstra were on totally different levels of thinking. Eventually, the audience could interfere in the discussion by asking questions. These questions were sent to the committee beforehand and professor Eijffinger gave every person with an interesting question the floor to ask the speakers about their opinions. The speakers and the audience, from students to former professors, generated a dynamic debate. When this ended, it was time for a coffee break.

After the break, I attended a workshop by SNS Reaal. The other options sessions were a workshop provided by APG and lectures by Duisenberg School of Finance and Van Lanschot. Arriving at my choice, SNS Reaal, I experienced a workshop where one actually had to work out. The participants of the workshop were divided in two groups and, during a quiz about the ins and outs of the euro, the groups had to answer questions. The group that gave the right answer could hit a nail with a hammer and the nail of the group that was the deepest won the quiz. Besides that, we also had an interactive session about the consequences of a eurozone in the field of banks and insurances.

All in all, it was a great symposium in which I learned a lot about the euro and the measures we, the future generation, have to take to prevent such a crisis from happening again. Now I could physically prepare for the après-ski drink.

Thinking of drinks, free barrels of beer pop up immediately. We did receive those, but the beer was, this time, poured in enormous mugs. These mugs, designed by Asset | Econometrics, could be seen everywhere in *pub de Boekanier*. However, the image of a lot of beer became more complete by the presence of different Heidi's and men dressed in lederhosen. The board of Asset | Econometrics, Asset | Economics and the Drinks & Activities committee were the stars of the evening, but there were definitely some good runner ups. This après-ski drink also met the requirements to be remembered. I had a great time and cannot wait for the next symposium and drink of Asset | Econometrics.

Name:
Whitney Pattinaja

Age:
22

Begin Studies:
2007

Acing a Tough Combination

THE PASSION OF PIETER-JAN VAN KESSEL

For this edition we meet up with someone who silently combines econometrics with clay courts, top spins and smashes. We meet up with a tennis player currently ranked 193rd of the Netherlands, first year econometrician Pieter-Jan van Kessel.

Name:
Pieter-Jan van Kessel

Age:
18

Begin Studies:
2010

Practicing a Passion

Pieter-Jan started playing tennis at the age of seven, when his parents gave him a racquet along with tennis clothes. "My brother is ten years older than I am and he played tennis, so that made me want to play tennis as well. At that age it just all looked really good and exciting when my brother played." Pieter Jan started at TV Maasdriel, but soon outgrew his peers. At the age of ten he became club champion in the category under 17. From there he moved on to Bastion Baselaar in Den Bosch, but eventually left. "At Bastion there were some good tennis players, but I disliked practice there. When I stopped practicing at Bastion, the club sort of made it impossible for me to play quality competition." He won some tournaments in the past years, but none of them were at the highest level. "In this regard I am a bit of a late-bloomer," Pieter-Jan remarks. His highest position in the youth ranking was 58th.

At the moment Pieter-Jan is not really part of a club. He practices five times a week, of which two are two and a half hour long practices and three two hour practices. One of those is at tennis school Simon, and three are at tennis school Gijs. On Saturdays he plays friendly matches, in preparation for tournaments during the upcoming summer. Both tennis schools complement each other well because they each have a different focus. Gijs focuses on footwork and basics, while Simon puts emphasis on solving in game situations. Apart from practice, Pieter-Jan goes to the gym for injury prevention.

One flaw in practice regards the game tape. "Right now we do not watch enough tape, so doing something right is more of a feel thing." Pieter-Jan does not watch a lot of tennis in his spare time though, only when he wants to focus on a particular element of a player's game. Watching the clay court at Roland Garros is something which gives him chills, but he does not have any idols. He only has minor role models in tennis such as his coach Sander van Grinsven, who got his tennis education at Bollettieri in the United States. "Because he is a lefty as well, I really keep a close eye on his serve."

Last year Pieter-Jan took a year off to focus on tennis. Unfortunately he had to deal with Q-koorts at the start of that year. Despite this misfortune, he feels like he improved a lot and is happy he made this decision. "I was always the youngest in my grade anyway and I feel like I made a lot of progress that I would not have made while studying." One negative thing about the period was that he felt a bit isolated from the world. Therefore he started getting excited about the new academic year when his books arrived.

Do not let it get to your head

The apparent simplicity is something that attracts Pieter-Jan to the game. "On the outside it seems such an easy game, while in fact it is really difficult. On top of that there is so much to the mental aspect of the game. That is a part of my game that is not yet fully under my control." Pieter-Jan believes this is the main area in which he must improve in order to become a better player. For example, when playing a player ranked lower than Pieter-Jan, he tends to tighten up because he is afraid of making mistakes. His best games come against higher ranked players, because he has nothing to lose.

Playing a good game also has a lot to do with his serve. "If I serve well my entire level of play goes up. My serve has never been my strength, so my confidence in serving is somewhat low. If the serve does not go well you start thinking about it and with it the quality of my footwork and forehand goes down, which are my weapons." For this reason, Gijs goes to all the tournaments with his pupils to do warm ups and prepare the players in the morning. This enables the players to fix any problems they have before the match.

Through tennis, Pieter-Jan has matured a lot. 'When you are at a small tournament everyone looks up to you, while when you are at a big tournament, the others think you are a loser. There is a lot of pressure, because you must always perform. When you lose to somebody, everybody sees it on the internet. The biggest part is to just believe in yourself. Getting your driver's license or taking exams is relatively easy because succeeding or getting a good grade only depends on yourself. The worst thing that can happen is an odd question during an exam. During a tennis match you have an opponent to deal with, so tennis helps me with reaching other goals.'

The main thing for Pieter-Jan is that you can deal with a lot of things in life if you have got yourself under control. Achieving total control is one of his goals.

The tennis association, finest hour and goals

Despite a high ranking, Pieter-Jan is not sponsored by the KNLTB (Royal Dutch tennis association), but does get some discounts on tennis gear. He has to pay practice fees himself at both tennis schools. This could be handled a lot better he thinks. "Right now only the top players in each age group get sponsored. The association makes sure they can fly the world and do whatever they want, which makes them spoiled and unmotivated. It happens way too much that they just quit." In Pieter-Jan's opinion it would be better if the group was broader and the tennis schools bundled forces instead of competing to increase the overall level of players in the Netherlands. "The most important thing is that players are motivated and really want to work for it."

When asked about his finest moment in tennis, Pieter-Jan talks about a three (out of four) star A-tournament in Rijen where he played a double against two guys that were rated in the 30s on singles last year. "These guys would probably crush us in the single. It was nice weather and there were over 300 people around the court. There was one ball that was way outside the court that I managed to hit forehand past the side of the net. At that moment the crowd gave us a standing ovation which was amazing."

Pieter-Jan's main goal in tennis is to get ranked within the top 50 of the Netherlands. This summer he hopes to take a step in the right direction by reaching the quarter finals in an A-tournament, a tournament in which all top players of the Netherlands, besides the top 10 such as Robin Haase and Thiemo de Bakker, participate in. Last year he was kicked out of the second round by someone ranked 11th. Another major goal is to become fiery on the court. "I can be pretty loose, but in general I am introvert. It kind of collides with my character to be fiery on the court but it is something I have to improve upon."

But his goals are not all tennis. He perhaps would like to join a committee next year. When asked if the combination is doable, he quickly reacts: "Definitely, I really like the combination because I cannot sit on a chair and study all day." It is clear to me that in whatever fashion it may be, we are sure to hear from Pieter-Jan in the future.

Text by: Corné Ruwaard

PRACTICAL REPORT

A Genetic Search at Schiphol Airport

It is a regular Thursday morning. It is just after six, so probably the inbound peak has just started. I look around in the terminal and see a mother with a young girl trying to find her way to her flight. I somewhat envy them, because they get to go on vacation. On the other hand I feel lucky, because I get to work at an airport, and working at an airport is fun.

Name:
Ramon van Schaik

Age:
24

Begin Studies:
2004

They say that Schiphol is like a city in itself with a special purpose and mostly, I agree. Although no one actually lives at Schiphol Airport, you can find all the facilities present in an average city. All these facilities, however, revolve around Schiphol's main purpose: allowing planes to land and take off. With such a simple postulation I must emphasize that the actual operation is not: flying is complicated business. All the infrastructure is provided and maintained by Schiphol Group, a company held by the state, the municipality of Amsterdam and Rotterdam and Aeroports de Paris. It is sometimes mistaken that Schiphol also carries out flights, because in fact this is done by the airlines, such as KLM and Martinair.
In addition, Schiphol is not primarily responsible for the actual operation of air traffic management (the fancy people you would picture sitting in a tower). This is done by a separate organization called Luchtverkeersleiding Nederland (LVNL).

With this many parties involved it is rather complicated to determine who is responsible in which proportion for problems that arise. One of these problems is noise annoyance, hindering some of the inhabitants of the area surrounding Schiphol. This is where I come into play. For nine months I was part of a subdepartment called Environmental Capacity, which belonged to the Capacity Management department of Schiphol. Environmental Capacity has a say in all things which determine noise annoyance, including the runway maintenance schedule of a year, and I was there to optimise this maintenance schedule.

I cannot talk about my research without telling some of the details. Therefore I will tell you my story in chronological order, in order to stay true to the process of researching and obtaining knowledge as the year went by.

Day 1: My research started by getting to know the airport. Eventually I would be studying the relationship between runway maintenance and noise annoyance, but without understanding the daily operation at the airport, such a research would be undoable. That is why on the first day I was taken on a field trip on airside. After being thoroughly checked by security, someone with the right clearance showed me around on the airfield. As can be seen below, Schiphol fills quite an area.

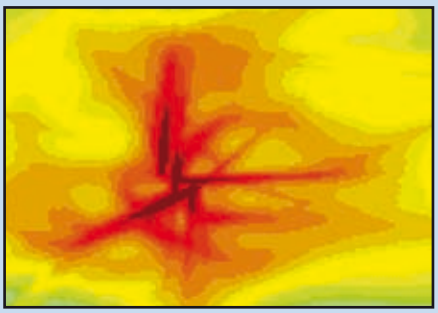
The man showing me around on the airport was apparently called "The Captain", and he knew quite a bit about the airfield. He was talking about the runways at Schiphol. "Schiphol has five main runways, but it never uses them all at the same time," he told me. "The used runway combination depends on several factors, the most important one being the wind. If the wind is too strong, planes can only take off or land with headwind (Dutch: tegenwind). The

cities that experience noise annoyance are therefore also determined by the wind."

Day 28: I got to know the airport pretty well, and I already felt at home at my department. I was walking around the airport with my supervisor. We did this many times and every day, I learned something new. "Of course, when a runway is under maintenance, it cannot be used," he explained. "The weather conditions show a different pattern in June than they do in January though. Therefore, the maintenance schedule also influences the number of people hindered by the noise. Your job will be to find the Pareto optimal maintenance schedule for a year."
Later that day I was to report at security, for one of my many extracurricular activities: mystery guesting. I was given something that was forbidden to carry through security and some official observers would follow me as I would test whether they would find it. Although this had nothing to do with the subject of my thesis, it was very interesting to gain a little peek into the kitchen of airport security.

Day 63: Schiphol is in the news almost every day, and this day it was our turn. The boundaries of noise annoyance do not fall from the sky; they are set by law and sometimes discussed in a consultative called the Alders Tafel, led by name giver and former minister Hans Alders. Here, Schiphol talks with the inhabitants of the area surrounding Schiphol and some other parties. And this consultative came to an agreement (called the Alders agreement) on the future of Schiphol and her surrounding area, which was all over the news. It also turned my research from future to reality.
The efficiency with which they discuss is mainly determined by the information available to the parties. That task belonged to me and some of my colleagues of Environmental Capacity: providing this information to the delegates. A very effective way of presenting information in discussions turned out to be the Pareto front. When a Pareto front of maintenance schedules on two conflicting interests is plotted, the parties can immediately see how much of one interest is in expense of the other. This can make discussions far more structured, as one can discuss on which compromising solution is acceptable. The main question is: how to find such a Pareto front? And in what way should the objectives be calculated?

Day 93: Regarding the second question, the Alders agreement provided some clarity. Let us focus on the most comprehensive measure out of all of them, namely houses that experience more than 58 dB(A) noise per year. By means of a physics model, a dB(A) overlay is produced for the area surrounding Schiphol, working somewhat like a "noise weather map", so called noise grids. The grid is produced by a model which combines the forecasted flight traffic with the runway availability and predicted weather for a year.

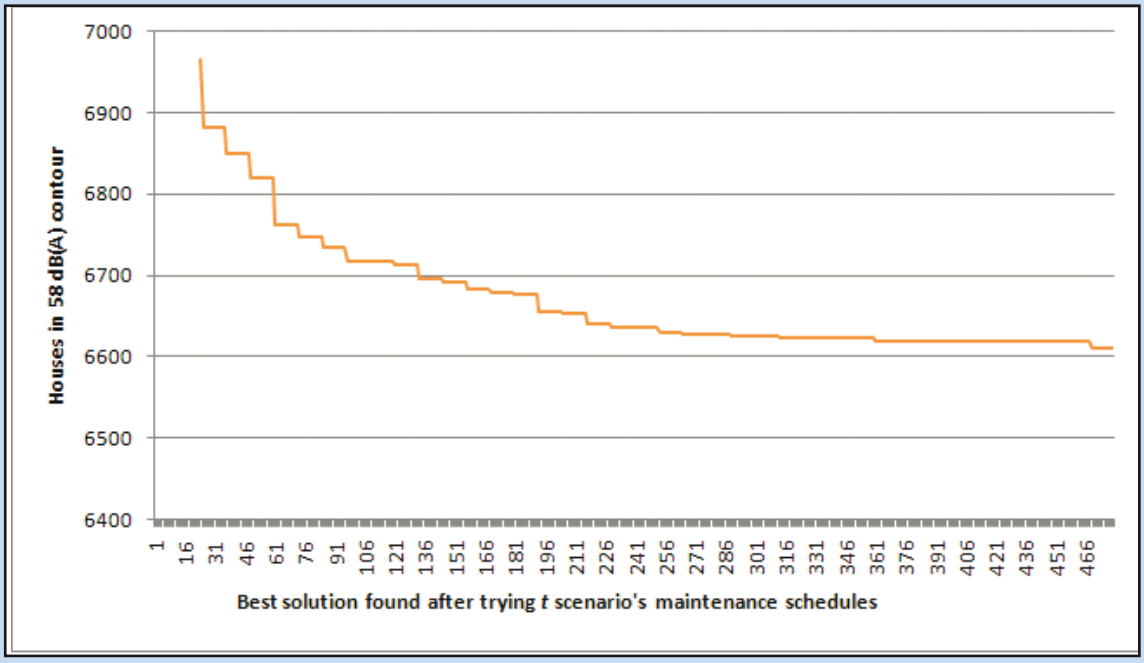


These grids could be produced in the blink of an eye, but the time consuming part was figuring out which houses experienced more than 58 dB(A). Law is pretty precise about how to do this. First, a contour is drawn. Schiphol's old software, constructed by NLR, would hereafter check each house individually for lying in the contour. I decided to introduce another counting method by gathering the houses into bins. This way, all that needed to be done was checking whether these bins lay in the contour. If the bins lie either completely in or out, all houses in the bin need not be individually checked.

Day 101: We tested the program and the results were awesome. "The program can outperform the speed of the old counting method by over a factor 40," I told my supervisor. "Also, it is far more stable and stores memory more efficiently." However, there was one thing the program could not do. It could not tell us which maintenance schedule was (Pareto) optimal. Realizing this, my supervisor mentioned two solutions. "Either we could try all possible solutions. However, at a calculation time of 3 seconds per scenario and a total of 254251200 possibilities, this will take over twenty years!" Since we do not have that much time, we decided to rely on something else: search heuristics! But either way, this still was an important milestone in my thesis, and therefore I celebrated it with the department on the Friday afternoon drink at Schiphol Plaza.

Day 120: We started off with oliebollen this morning. It was the first of November, which means that Schiphol starts a new noise year with a clean slate. Since we did not have a single violation in the past year, it was a good opportunity to celebrate this.
Me and my supervisor recapped some more about search heuristics. They come in several ways, but what they all have in common is that they calculate some number of solutions, and then let the characteristics and score of these previous solutions determine which calculations should be processed

Ernst & Young



next. There is one exception to this: the random search, where at pure randomness solutions are tried. Comparing a search heuristic to the random search would give you an indication of whether your method of searching is actually useful.

Day 160: After several months of initiating research, the Genetic Algorithm (GA) turned out to be the most promising search heuristic. This algorithm tries to impose evolution on the maintenance schedules in order to find better ones. Although evolution sounds like a very complex process, it only boils down to three operations: reproduction, mutation and selection. Reproduction means combining a maintenance schedule A and B in order to simulate the production of a new maintenance schedule C. In our case, we get the maintenance dates for each runway randomly from either solution A or B. Mutation means changing characteristics of some solution, with a certain (low) probability. This is useful to escape local optima. Selection is just like real life: survival of the fittest. Only the best solutions get to advance to the next generation.

The algorithm approximately works as follows:
1. Start off with some initial population of maintenance schedules.
2. For some number of generations
a. Let the current generation make children.
b. Mutate these children.
c. Calculate the fitness of the children.
d. Create a new generation by selecting only the fittest children.

When doing this, we saw that after a while, stronger and stronger solutions emerged, as can be seen in the figure above. After each generation, the optimal solution found so far is plotted. Apparently our idea of evolution was working on the optimization problem and Schiphol could use this to find an optimal scenario. The Genetic Algorithm could also be adapted so that it would search for a Pareto front instead of an individual objective.

We even saw that the Genetic Algorithm was significantly faster than a random search. Instead of running a computer program for 20 years, Schiphol can now have a very good approximation of the Pareto optimal maintenance schedules within a few hours.

Deadline day: It is five more hours to the deadline, and like a Domino D-day builder I am filling the last gaps of the line of domino blocks which is my thesis. There was just one more thing that I was about to expand a little bit on: a proof about continuity for which a supporting theory was to be found in my Analysis book. And while trying to find the correct page, all of a sudden I realized that I was about to end my studies the same way I started them. I pictured myself sitting there on my first day in Analysis 1, about six and a half years ago and suddenly I saw Henk Norde's promise about dreadful analysis exercises being fulfilled: "Someday you will understand why you were doing this."

COLUMN

Merit Pay of Excellent Teaching

The Dutch cabinet has planned measures to raise the reward for excellent teachers. For that purpose, 250 million euro is available. As such, this is a praiseworthy initiative. It does not only potentially improve justice in rewarding – excellence should be rewarded - but also provides an incentive to perform better.

Name:
Johan Graafland

Position:
Full Professor

However, economic literature shows that extrinsic motives (as making money is) may crowd out the intrinsic motive to perform well. This might be well the case for education, because good teachers are presumably substantially intrinsically motivated (that is why they are good). Moreover, one can doubt whether the performance of teachers is well measurable.

Also the Dutch Educational Council argues in her advice that it is impossible to develop a good system that makes performance of (high school) teachers comparable. If that is the case, merit pay may have adverse effects. If the performance cannot measured in an accurate way, macho behaviour or favouritism may be stimulated and this may easily distort justice in rewarding rather than enforce it. The positive incentive to increase effort or quality may then easily revolve into negative effects on fraternal relations between teachers.

For this reason, it is amazing that the Dutch Educational Council, after concluding that teaching performance is hardly measurable, proposes that every school should select the top 5 % of best teachers and reward them with extra salary (up to 8% of average salary) and provide them with more time and budget for educational development. I expect that other teachers will not be inspired by this (negative) selection. They do not only face a relative decline income (and economic research shows that relative rather than absolute income matters), but also a rise in their teaching workload as the best teachers are exempted from teaching in order to devote themselves to development of teaching materials. Moreover, it is a wrong signal about the value of teaching if one rewards good teaching performance with exemption of teaching hours, because that suggests that teaching is not fun. But the excellent teachers lucky enough to be selected to the top 5% may become frustrated when they discover that they are looked upon with suspicion by their colleagues and experience little cooperation from them with their initiatives. Some economic researches indeed show that merit pay reduces the overall performance of team, because it instils feelings of inequity, promotes dissatisfaction and therefore undermines cooperation.

The quality of teaching in high schools can therefore probably be better stimulated by providing all teachers regularly with good external courses in a pleasant, enthusiastic environment. Another way to keep alert on opportunities for raising teaching quality is letting colleagues visite each others courses now and then to provide feedback and suggestions for improvement. Of course, that will only work if colleagues show respect to each other and are open to criticism. But if that is the case, this may be a cheaper alternative that might work better than merit pay based on bad measurement of performance. Let the Educational Council therefore also consider how the fraternal relations between teachers can be improved so that they are more prepared to benefit from each other's experience. And if one still wants to provide a monetary reward: a good bottle of wine at one's birthday is also very nice (although others might prefer beer). Because it is the gesture that matters.

Arranging Train Carriages

PUZZLE

Some, or maybe most, of you will be familiar with the concept of train puzzles, where you have to arrange a set of carriages in a certain order, only using so many empty spaces to rearrange them. Naturally this idea can be extended to a more mathematical one, of which we present one variation to you below.

On track A there is a row of carriages, with an engine L on their right. We assume the carriages are numbered 1,2 …, n, but they are not in the right order. We have to move them to track B and put them in the order n, n-1, …, 1, L.

To do this, we use the engine L to move the carriages, and we also have the two tracks M1 and M2 at our disposal, both of which are long enough to hold the entire train. Connecting and disconnecting the wagons and shifting the tracks takes no extra energy or trouble: this goes naturally, so you do not have to take these things into account.

(i) Show that the carriages can be ordered starting in any order, such that the time needed for this is at most O(n) (For those of you unfamiliar with this sign: $f(n) = O(g(n))$ means that there is a constant c such that $|f(n)| < c \cdot |g(n)|$ for n sufficiently large).

(ii) If the engine can pull a random number of carriages, but can only push two at the same time, is it still possible to find the correct order? If so, how does the time needed for the ordering change in this situation?

(iii) Determine for each of the six permutations of 1,2,3 the number of times L changes directions in the optimal strategy.

Please send your solution to Nekst@Asset-Econometrics.nl before 27 May 2011. The previous puzzle, the Ken-Ken, was solved by many readers and thus we received the correct solution from a lot of you. The lucky winner is **Hans Reijnierse**. He can pick up a crate of beer or a pie (Dutch: vlaai) for his efforts at room E110. For the winner of this puzzle, the same prize will be waiting.

Good Luck!

TO CONCLUDE

Graduates

Over the past months, the following econometricians obtained their Master's degree. Asset | Econometrics would like to congratulate:

Name:	Ramon van Schaik
Title:	Noise Minimization in the Vicinity of Schiphol
Supervisors:	Prof. Dr G. Kant, Dr Ir Ing. M.J.P. Peeters
Name:	Dirk van Dooren
Title:	Infinite Orthogonality Graphs; Coloring the Hyperboloids
Supervisor:	Prof. Dr Ir W.H. Haemers
Name:	Umut Yilmaz
Title:	Estimating Liabilities of Philips Healthcare on Suppliers' Supply Chain
Supervisors:	Dr R.C.M. Brekelmans, Dr Ir J. Ashayeri
Name:	Bart Verschoor
Title:	The Impact of Asset Illiquidity on the Solvency Requirements of Pension Funds – Updating the FTK's Standardized Approach
Supervisors:	Prof. Dr T.E. Nijman, Dr R.J. Mahieu
Name:	Manon Geertsen
Title:	Product Life Cycle
Supervisors:	Prof. Dr P.M. Kort, Ir V. Hagspiel
Name:	Noortje van der Vorst
Title:	Estimating Economic Capital by Replicating Portfolios
Supervisors:	Dr R. van den Akker, Dr Ir G.W.P. Charlier
Name:	Anne Michielsen
Title:	Liquidity Risk Embedded in Changes in the Retail Savings Deposit Volume
Supervisors:	Dr R.J.A. Laeven, Prof. Dr J.M. Schumacher
Name:	Sauping Man
Title:	Asymmetric Effects in the Impact of Oil Prices on Some Macroeconomic Variables – Evidence for Some European Countries
Supervisors:	Dr P. Cizek, Dr F.C. Drost

Agenda

TO CONCLUDE

Friday 1 April
Family day (Brothers & Sisters)
On 1 April, the yearly Family Day will take place. This year all brothers and sisters of our active members are welcomed to Tilburg for an introduction to our beautiful study association. The activity will start at six o'clock with a dinner at *café Jacks*. Thereafter the knowledge of the participants will be tested by means of a pub quiz! Participation is free of any costs.

Tuesday 5 April
Activity & Lecture Drink
On 5 April, the Drinks & Activities committee will organise yet another activity for all members. After this activity, the second lecture drink of this academic year will take place.

Wednesday 6 April
Board Information Session
Are you interested in a year in the board of Asset | Econometrics? Would you like to spend a year in charge of our association or are you just interested to find out what it means to be in the board? Then join the board information session on 6 April! The information session will take place on 6 April at seven o'clock hours in *café Karel*.

Friday 15 April – Sunday 17 April
Active Members Weekend
During the Active Members Weekend, all active members are going to have the best weekend of the year! Nobody knows where the weekend will take place and what activities will be done until the very last moment. By means of this weekend, the board of Asset | Econometrics would like to thank all the active members for their efforts during this academic year.

Tuesday 19 April
Freshmen Activity
On 19 April, the Freshmen Committee organises its last activity. During this evening "Crazy 88" will be played, just like the game in the tv show. Participants will be divided in groups, and each group will get 88 exercises. These missions vary from easy to accomplish to more difficult and challenging. An example of an exercise is 'inflate a balloon until it explodes' or 'eat a big mac by putting this in your mouth at once'. The goal of the group is to fulfill as much of the missions as possible. If you would like to challenge yourself and get to know new fellow freshmen you should definitely participate in this activity!

Tuesday 3 May
Econometric Challenge Tilburg & Drink
For the first time in the history of Asset | Econometrics, the Econometric Challenge Tilburg will be organised! This brand new event will take place on 3 May at *de Harmonie*, located in the city centre of Tilburg. During the day, two cases will be provided by two different companies; one in the field of Finance (OC&C) and one in the field of Logistics or Operations Research (to be determined). Students will work in teams of three to show the best of themselves in order to gain victory. The day will end with a drink in our favourite pub *café van Horen Zeggen*.

Wednesday 15 June
Football tournament & Announcement Drink
Every year, Asset | Econometrics organises a football tournament, in which all students and lecturers can participate. Subscribe with a team and show off your football skills! Afterwards, the candidate board 2011-2012 will be announced.

Quatsch!

REMARKABLE QUOTES

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

English quotes
Timo Deist says: "All Chinese hit me." Fang Qi Wu: "Who hits you then?" Timo Deist: "You, and Fang Qi…"

Timo Deist points to a painting of Pythagoras and asks: "Who is this?" Emy van der Wielen: "A God?" Fang Qi Wu: "It is a mathematician." Emy: "Oh, but that is the same."

Dutch quotes
Thomas Geelen: "Moeten mensen uit de KasCo per se naar de General Members Meeting?" Joep Olde Junick: "Wat is er met mensen die uit de kast komen?"

Geert Alkema en Janneke van Schijndel bekijken foto's van het Asset Kerstgala. Geert: "Deze mensen zijn dus vantevoren allemaal bij Fleur geweest." Janneke: "Die Chinees ook? Oh nee, wacht, dat is Fang Qi."

Pascal Heijerjans beschrijft een gebouw: "Dat is echt zo'n wit, statisch pand."

Senna Jansing: "Dan kunnen we naar Sunday Blues gaan in Ede, op 3 april." Sander Vromen: "Is dat op een zondag?"

Jeroen Dalderop wanneer hij een computer laat vallen: "Oh, daar bleef hij best rustig onder. Ik zou ontploffen wanneer ik een computer was."

Stèphanie van Breda tijdens een training communicatie: "Ik heb een grijs pak, wat zegt dat over mij?" Trainer: "Dat ligt eraan wat je eronder draagt." Stèphanie: "Nog niets."

Ad van Herpen: "Jij bent mijn redder in de branding." Bart van Schuppen: "Ja, en jij mijn rots in nood."

Daniëlle van Dalen merkt op dat de bel van het spel Halli Galli kapot is. Geert Alkema: "Dan moeten we voortaan kloppen, want de bel doet het niet!"

Ad van Herpen wil zijn neutraliteit aangeven: "I have no meaning."

Daniëlle van Dalen over het nut van badmutsen: "Waarom zou je douchen met een muts op?"

Fleur van der Heiden over de verkiezingen: "Ik heb op de eerste vrouw van de lijst gestemd." Senna Jansing: "Ja, dat dacht ik ook te doen, maar toen had ik op Maxime Verhagen gestemd." Marleen Veldhuijzen: "Wie is dat?"

Janneke van Schijndel noemt de eerste tien decimalen van pi op. Senna Jansing: "Wauw, ik kom niet verder dan 3,4."

Daniëlle van Dalen over de voorgaande quatsch van Senna: "En toen zei Senna dat ze niet verder kwam dan 1,4!"

Ad van Herpen over het eventueel aanschaffen van een spiegelreflexcamera: "Ja, ik wil ook zo'n luxaflexcamera!"

Harold van Heijst: "Kak, we zijn die vrouwen vergeten te downloaden."

Frans Fonville is bezig met zijn nieuwe telefoon: "Ik moet 'we are' typen, maar het lukt niet."

Senna Jansing: "Ik weet niet waar Venlo ligt." Marleen Veldhuijzen, voor de grap: "Weet jij niet waar Venlo ligt? Dat ligt in Groningen." Senna Jansing: "Nou, als je zou zeggen dat het in Limburg lag, dan zou ik je ook geloven!"

Fang Qi Wu: "Twee woorden, negen letters!" Sander Vromen: "En een spatie! Oh wacht, dat is logisch, twee woorden…"

Wilbert Kistemaker: "Waar wordt dat feest georganiseerd? Het begon met een m..." Marleen Balvert: "Polly?"

Has van Vlokhoven: "Ik weet nooit zo goed wat 10 en wat 9 is."

Frans Fonville: "Is dat morgen? Oh, dat is nog niet geweest!"

EBT

Towers Watson