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The Nekst Change

As the warm and sunny summer fades away, the beautifully colored autumn takes its place. And just as the weather changes, so do many other things. Maybe you have started a new Bachelor or Master, moved to a new city, or started a board year. Also, our lectures are strictly on campus, and thanks to that our campus has never been busier. For me, the biggest change is Nekst. This year, I have been asked to take over with Sara from Juliëtte and Meike. At first, I was quite nervous about this, because I have to admit that I did not have the most knowledge about Nekst. So, I spent my summer reading through our Nekst archive. Luckily, I also have a very enthusiastic committee and Juliëtte as a coordinator, which took most of my nerves away.

Fortunately, one thing that did not change is the energy that our committee has put into creating Nekst! Firstly, we can present to you a new column, the Parents of the Board, where we interview the parents of our boardies to know a little bit more about them. Nekst to that I want to introduce our new columnists Alexander Theloudis, who will write twice for us, and Christoph Walsh who will write the whole year for us. Also, do not forget to check out the interview with Roos Herrings, who works at EyeOn. In addition, we also have an interesting special about image-generating programs.

So as many things change in our lives, sit down with a cup of hot coffee to read your old trusted Nekst and enjoy!

Yours sincerely,

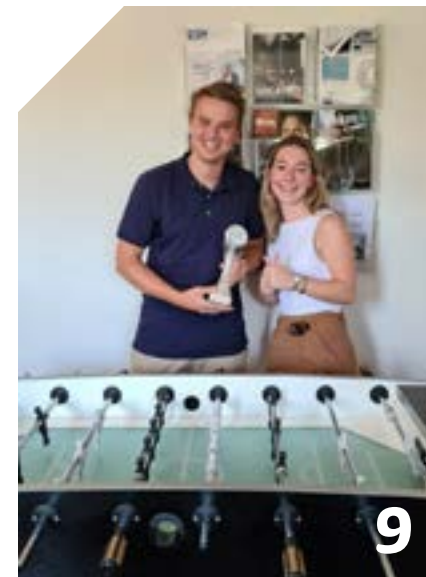**Laurentien Diepenhorst**
Editor-in-Chief

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TILBURG UNIVERSITY

EBT — Economic Business weeks Tilburg

Dear Members,

It has been an eventful start of the year! As all lectures and tutorials are on campus again and there is no online education for the first time in three years, the university, and with that also our rooms, have been very lively again. We are very happy to welcome a lot of new people to our events as well as familiar faces that are attending with ongoing enthusiasm. I feel a sense of pride when seeing our members together at events. Especially the size of the blue army during the past TUC is something that is a testament to the involvement that our members have to each other and to the association. I still am amazed at the kindness, enthusiasm, and commitment that everybody brings to all activities. This is a great motivation to sustain the high level of work that has been delivered in previous years and look at methods to improve even further.

Some of you may already know me, but for those who do not know me yet I will introduce myself shortly. My name is Luc Geurts and I am 21 years old. I started studying Econometrics in 2019 and moved to Tilburg in my second year. Next to my life at Asset | Econometrics, I play football at T.S.V.V. Merlijn, where I am an active member as well. On top of this, I enjoy playing other sports such as squash and solving puzzles. I became active at our lovely association in my second year, starting in the Europe Trip committee. After organizing a great trip to Prague, I joined the Econometrics in Practice Day. Over the past, years I have become increasingly involved in our association and I am both proud and grateful to be able to represent Asset | Econometrics for this academic year. Together with my fellow board members, Juliëtte Tillie, Matthijs Kroesen, Ikie Leunissen, Meike Goedschalk en Nienke Keuning, I am looking forward to offering all kinds of formal and informal events to all of you!

Over the past few months Asset | Econometrics has hosted a lot of different events, ranging from our Open Party, the Freshmen Introduction to the Hackathon and the EOR Business Dinner. I would like to shed light on our Inhouse Day with the charity organization World Wildlife Fund. We are very proud to offer you different opportunities and see how econometrics can be applied in all different facets of life. As a board, we would like to give our compliments to all active members who have been working hard on these successful events. Your dedication to the association is greatly appreciated and we look forward to repaying you during our Active Members Day and Weekend! I also want to thank our other members for coming to events or contributing in any other way.

Together with all of you we want to make this another prosperous year for our Asset | Econometrics. We hope to see you at many of our events and at the rooms as well and are always curious for ways to improve, so make sure to voice your ideas and opinions regarding our association to us!

Then, I would like to close by wishing you a lot of fun while reading the first Nekst of the year!

Luc Geurts
Chairman Asset | Econometrics 2022-2023

Meet the Crew!
Nekst committee 2022-2023

Laurentien Diepenhorst

Hihi! My name is Laurentien or if you would like it shorter, Loe. I am very excited to tell you that I will be the Editor-in-Chief this year. I have lived my entire life in Sommelsdijk, which is a small town on an island named Goeree-Overflakkee. For the people wondering, that is in Zuid-Holland and not in Zeeland! I am 20 years old and already in the third year of my Bachelor in Econometrics. Besides spending a lot of time in the University Library or at the Rooms, I absolutely love to swim and have done so for at least 12 years. Also, I spend my time tutoring high school children in Mathematics and hanging out with my lovely friends from Picknick. A fun fact about me is that I once had a bet with my teacher, in high school, about whether I could pass Math A, besides my Math B and D, in one year (instead of three). I won and got a pie!

Sara Darwinkel

Hello there! I am Sara and I am the Nekst lay-out editor (aka design feut)! You may recognize me from the previous Nekst edition in which I was the editor of the best articles such as the Board Game theory special and the midpage where you could find out which crew member you should date. As I am writing this I realize I forgot the formalities: I am 19 years old, in the third year of my Bachelor and I love to spend time with my friends! When I have some free time I will hop on the train to go visit my parents in France, there I take time to hug all the animals at the farm and escape my busy life from Tilburg ;p. A fun fact about me would be that I think cold knacks are better than warm ones.

Juliëtte Tillie

Hi! My name is Juliëtte, but I would like it if you just call me Tillie. Being the Secretary of the Asset | Econometrics board this year, I will coordinate the Nekst committee. I have been in the Nekst twice before, one time as a writer and one time as Editor-in-Chief, so I hope this will help me in my new role! A bit about me: Right now I am 24 years old and I just finished my Bachelor. I was raised in a small village near Roermond, where my two lovely cats (and parents) still live. Unfortunately, I do not have a lot of time this year to visit them. If I do have some spare time, I love to spend it with my friends or boyfriend, or I like to practice my favorite hobby: singing. A fun fact about me is that I love to chug half a liter of water when I wake up, which I think I am very good at.

Joep Adriaanse

Hi there, my name is Joep. I am 19 year old, second year student here in Tilburg. I come from Heinkenszand, a small town in Zeeland. Yes, people actually live there, believe me. Since I did not want to travel for 1.5 hours, twice a day, every day, I have had my own place in Tilburg since the start of last year. I still have my Horeca job back in Zeeland, where I usually work on Saturdays. Throughout the week I spend quite a few hours tutoring high school kids, or sometimes even university students. I mostly teach mathematical and/or economics courses. In my free time, playing sports is what I love most. Squash and tennis are my favorites, which is why I am also a member of T.S.T.V. Lacoste. I firmly believe in 'Alles sal reg kom, as ons almal ons plig doen.' If you need help translating, it is a quote from South Africa.

Selina Bötzel

Hii, my name is Selina. I am 22 years old and a third year Bachelor student. Originally, I come from a very small village called Eck en Wiel. I used to live there with my parents, sister, and dogs. I am sure no one has ever heard of this place, but it is located near Tiel in Gelderland. I have been living in Tilburg for more than two years now. In my spare time, I like to do fun things with my friends and boyfriend. Like going out for dinner or partying. I play volleyball at Gepidae and love to windsurf in the summer.

Huub Hoven

Hi! I'm Huub Hoven, a first year Econometrics student. I am 20 years old and live in Flanders. After studying engineering science in Leuven for two years, getting so many questions about why I was not studying econometrics or trade engineering, and since I only liked math in that degree, I decided to completely turn it around and study here in Tilburg. I have a passion for staying up to date on global events. I try to stay informed even about elections in countries far away, where the result will never affect my life in the slightest. I also love motorsport, there is something about seeing overpaid people driving around in circles a bunch that gets me going.

Timo Klabbers

The picture next to this piece of text is me, Timo! I am 21 years old and in my second year of study. Besides studying and the Asset | Econometrics events I am busy with Scouting. Last year I was also on the Nekst committee. This year I will write some articles and I will manage the website and the LinkedIn posts. I live in Tilburg, and on the weekends I go to Amersfoort.

Martin Kubíček

Hi, I am Martin and I am 20 years old. I commenced my studies at Tilburg as an international student from the Czech Republic, where I was born and lived my whole life. I come from Ústí nad Labem, a provincial industrial city in the north of the country. In my free time, I play floorball, an indoor sport known to the Dutch as 'Unihockey'. I have been admitted to a floorball team in Tilburg and I play competitively in the highest Dutch league. Other than that, I am interested in astronomy, AI learning, and global politics. A fun fact about me is that I have had four brain concussions.

Floris van de Moosdijk

Hi! My name is Floris and I am 20 years old. I am a third year student and live in Asten. One of my biggest hobbies is producing music together with friends. My ambition is to release a song that I am truly proud of. Being a bit of a perfectionist has proven to be challenging. Next to making music I really like to play games together with friends and family, preferably ones with a big strategic element. My favorite game is Koehandel (You are Bluffing! in English) and I really like to play bridge with my grandparents from time to time as well.

Floris Somers

Hi, Floris here. I am 22 years old. Some could describe me as chaotic and forgetful, but I am also empathic and enthusiastic! Besides being present at most Astrics events and spending some time crying in the UB, I have some other things I like to spend some time on. I am passionate about several things; I love to drink tasteful red wine with friends, read about new music from my favorite artists, and travel around.

Guus van der Velden

Hi, My name is Guus and I am 19 years old. I was born and raised in Nuenen, which is a small village on the edge of Eindhoven. This is my second year of econometrics and from the first of November, I have finally managed to secure a place in Tilburg, after a long year of traveling one hour back and forth, for either lectures, tests, or drinks with Asset | Econometrics. I love playing sports as well. In Eindhoven, I like to regularly hit the gym and I play football with my team, which we often mix with a drink.

The Latest

Welcome to 'the Latest'. In this Nekst edition, we inform you about the recent laureates of the Nobel Prize for Economics, one of which is the famous central banker Ben Bernanke.

written by **Martin Kubíček**

The Nobles Prize in Economics was awarded for research on Banks and Financial crises

On October 10 The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2022 was awarded jointly to Ben S. Bernanke, Douglas W. Diamond, and Philip H. Dybvig. Their analyses have been of great practical importance in regulating financial markets and dealing with financial crises.

Mr. Ben Bernanke, famous for being in charge of the Federal Reserve System, during the financial meltdown in 2008, was awarded the Prize for his papers investigating the topic of the aftermath of financial crises. In his work, Bernanke identifies how bad things can go when banks do not handle financial crises, primarily modeled on the 1930s Great Depression. The policy decisions that Bernanke implemented as the central banker between 2008 and 2009 were influenced by his own prior investigation on the topic.

On the contrary, the other awarded paper, published by the gentlemen Diamond and Dybvig, focused more closely on the importance of banks as middlemen when turning short-term assets into long-term loan commitments. The research has shed light on the importance of bank-like institutions in providing such services, but also emphasized the system's vulnerability, as, during struggles, banks have very few liquid assets to react to. Similarly, as in the case of Bernanke, the research was mainly grounded upon the observations of the Great Depression.

The award of the Nobel Prize in Economics to the trio researching the Great Depression is a bit controversial due to its topicality in the context of recovery from the economic slowdown caused by the COVID-19 outbreak and the present energy crises hitting the European Union. As a member of the Nobel Prize committee, Mr. John Hassler concluded: "Financial crises and depression are kind of the worst things that can happen to the economy. It created starvation during the 30s, even in the richest economies of the world. These things can happen again, and we need to have an understanding of the mechanism behind those and what to do about it, and the laureates this year provide that."

An Eye on the Future: Supply Chain Consulting at EyeOn

written by **Guus van der Velsen** and **Floris van de Moosdijk**

On Thursday, October 27, we were privileged to interview Roos Herrings, a consultant at EyeOn. EyeOn is a consultancy firm with expertise in planning processes and forecasting. Their goal is to help make impactful improvements in the planning processes of all kinds of businesses. The company has seven offices worldwide, with the head office settled in Aarle-Rixtel, Noord-Brabant. Roos started working full-time at EyeOn earlier this year after graduating in Econometrics and Mathematical Economics at Tilburg University. She gladly answered our questions about her experience at EyeOn in her first months of working at the company.

Roos Herrings

To start off, could you tell us about your role at EyeOn?
"I am a consultant in the Planning Services team, which is one of the three product teams. The other teams are Data Science and Solutions. Planning Services focusses on improving supply chain processes by using data science and analysis. Most of the time, we have a long-term relationship with these customers and help them every month. Data Science and Planning Services are especially closely linked. Data Science is focussed on innovation and making sure that services can run in a robust and efficient way.

My department is very much what you would expect from a department called Planning Services. We are mainly concerned with planning assignments, so forecasting and inventory assignments. What I really like is that we work with the systems and data of the client and combine that with our knowledge. I also really enjoy working on dashboarding projects. This mostly entails making an insights dashboard using a large database of a client, so that the client can easily understand their data and find out if there is something they should pay extra attention to.

Those are my roles with the clients, but internally I have some tasks as well. This for instance includes helping new employees feel at home and giving training sessions. For example, I will run a forecasting game for trainees this afternoon. I also work on standardizing our programs so that we do not have to start building a model from scratch for every new project. Moreover, I'm part of the EyeOn Foundation, where I participate in projects with a social purpose."

How and why did you end up at EyeOn?
"I had some trouble deciding what to do after my studies, as most people probably do, as there are so many options. Three months before the end of my studies, I got into contact with EyeOn via LinkedIn and quickly started working there part-time for some weeks. When I graduated in February of this year, I decided to directly start working full-time. What I noticed in the first months at EyeOn is that I have learned a lot in only a couple of months. The difference between studying and working is large, but you get used to it quickly. I started seeing the connection between the techniques we use here and what I learned while studying more and more.

What attracted me to EyeOn was that I could get to know all kinds of industries instead of committing to one industry specifically. This way I can learn about the differences between sectors and find out what interests me most. The work might fundamentally be similar, but the areas that require the most attention vary a lot between industries. For instance, supply chain in the pharmaceutical industry is different from the supply chain in the process industry.

Next to that, I really like the atmosphere at EyeOn, as it is a relatively small (~130 employees), growing company with many young employees like me. That kind of environment made the step between studying and working a bit smaller and made me feel at home more easily. Another nice aspect is the location: We are located in a castle, the Croy castle in Aarle-Rixtel. It makes the environment special. It leaves an impression and allows for nice walks during breaks."

How much freedom do you have in choosing your projects?
"When you start at EyeOn, you take a personality analysis. This analysis helps with pointing out which members of the team you could probably work well with, and which projects would fit you best. So the projects you get are mostly the ones that fit your personality or that help you develop in a certain way. Additionally, the experiences you already accumulated play a large role as well. You do not have complete freedom on which projects you are going to work on, but you have quite some say in it and you can definitely express your wishes."

What is the EyeOn Foundation?
"The EyeOn Foundation is a foundation within EyeOn that focuses on using our knowledge for socially relevant causes. An example of a recent project of the EyeOn Foundation is that we sent urgently needed goods to Ukraine with our budget and the help of our contacts. I am a member of the foundation together with some other colleagues because I like to do work for a social purpose next to my normal work. At the moment, we try to contribute to a free training program for refugees in the Netherlands who have a background in IT. These refugees often struggle with applying their skills in the Netherlands, because of the differences in this field here compared to their experience or studies they followed in their home country. We want to reduce that gap so they can successfully use the skills they possess."

Are there some fun activities with colleagues outside of normal working hours?
"Yes! EyeOn organizes strategic days and inspiration days for the whole company, so not just with employees in the Netherlands, but together with people from offices in other countries. During the inspiration days we participate in all kinds of inspiring workshops. During the strategic days we all travel to a city abroad and have discuss the strategy for the coming year. There is also time for many fun activities during these days.

Furthermore, there are more regular fun activities together, like having a drink or playing games. We have a lot of sporty employees, so sporting activities are sometimes planned as well. So yes, at EyeOn you can definitely participate in activities with colleagues outside of work. But even at work, we have a room for table footballing, which generates a pleasantly competitive atmosphere. Recently, my colleague and I won the table football tournament and we even won a trophy with it, so it is taken remarkably seriously. Overall, the ambiance at EyeOn is great, which makes it a nice place to work." ●

Career Paths Are Not Deterministic

Never Stop Learning

written by **Floris van de Moosdijk**, **Joep Adriaanse**, and **Selina Bötzel**

For the first edition of Nekst of this year, we had the privilege of interviewing both Nienke's and Ikie's parents. They were all very eager to tell us about their student life, their jobs, and what they think of their daughters' study choice.

We were excited to talk to Lisette and Henk Jan, who made sure to let us know they are proud parents of Nienke. We know now that Nienke's choice to study in Tilburg was not because of the great stories told by her parents. Her mother studied occupational therapy in Amsterdam, quite a long way from here. She lived rather close to the city, though, which is why she never left the house for a room in the city center. The thirty minute train journey was doable. Nowadays, Lisette is a primary school teacher. She followed the PABO at a later point in life, when Nienke, the youngest of her kids, went to primary school. She now very much enjoys teaching young kids, especially those in fourth grade.

Henk Jan has completed two studies in two different cities. Initially, he planned on going into the military, rather than studying. His dreams were crushed, however, by hay fever. He did not pass an allergy test in Utrecht, which meant a change of plans. He chose mechanical engineering, but by the time he finished he had gotten sick of the endless mathematics and physics. That is why he chose to follow a successive study in Enschede, on business economics. This study was tailor-made for students who had already finished a study like Henk Jan's because they could skip over many of the mathematical aspects. Therefore, he completed three years worth of studying in only one and a half years. It was intense, though, because he was forced to spend about sixty to seventy hours per week on his study. He now puts this quickly acquired knowledge to good use trying to move factories away from low-wage countries, for a company called Hunter Douglas.

This did not mean Henk Jan had to compromise on having fun because he was still able to occasionally organize a party at his home in Enschede. He lived there with eight others, who all followed the same study. The couple who had lived there before they did, had been unable to sell the house, after which they decided to rent it to students. The neighbors were not allowed to know, so a cleaning lady came by every now and then to keep everything as neat as possible. It is still a mystery how the inattentive neighbors could have missed the fact that about a hundred people were in that house once. They had come together to watch the Dutch football team. There was plenty of room for a get-together like this in the nine-bedroom house. Lisette was present on such occasions too. She and Henk Jan have known each other since before student life started for Lisette.

Neither of the two has ever really been a member of a study, student, or sports association in the city they have studied in. They had a fun time together with other people who followed the same study as them, but they were not part of something quite like Asset | Econometrics, which has a full board and a budget to spend on fun activities. Henk Jan was busy enough coaching a volleyball team back in Woerden, where he grew up. He did, however, find the time to organize a partaking in the 1990 Bata-

vierenrace, something his daughter would also do, thirty-one years later.

When asked about Nienke's choice of study, an expression of pride takes over their faces. A recollection of Nienke's 'shortlist' came to mind. They visited about every university in the country, with the exception of Groningen and Enschede, before Nienke could properly make a substantiated decision on where she wanted to go. Both parents were glad to see that, when their daughter went to Tilburg, she could manage herself well as a very social being and a hard worker. Because of these personality traits, they were not surprised when they heard Nienke was going to do a board year. It fits her, is the collective conclusion.

They never really doubted Nienke's ability to take on a tough study like Econometrics. Back when she was nine years old and the family moved to Poland for three years, she won the best student award at the international school she went to. She fought through the challenges that moving to a foreign country must entail and adapted very quickly to her new environment. "Without a doubt, we know she did an excellent job as Asset | Econometrics' Internal Affairs representative in the past year."

We also got to meet Christien and Paul, Ikie's parents. Two very active people, as we noticed very soon. Like Nienke, Ikie did not make her decision to go study and live in Tilburg based on her parents' stories. Christien and Paul studied in Arnhem and Utrecht, respectively.

Christien had made plans to get to become a journalist after completing her HAVO. Sadly, she never got to that point. During her high school time, she was too busy with things that seemed more fun to her, like writing for the school newspaper. We have ruled out the possibility that Ikie has inherited her mathematical aptitude from her mother. When Christien got the news that she did not pass the HAVO exam, she decided to relinquish her dreams of studying something journalism-related and set off to CIOS in Arnhem. She was too eager to leave the house to sit through another year of high school.

It turned out that CIOS was an excellent second choice. She liked being active and felt that she was in the right place when giving volleyball training in the evenings. Apart from this experience that would turn out to be valuable later in life, it yielded a much-needed source of income.

Paul also followed a human body-focused study, which was not his first choice either. He left his parental home at 18 years, moving away from a place close to Heerlen. He wanted to go to the police academy, but the fact that he wore glasses threw a spanner in the works. If it were up to his father, he would get his degree as quickly as possible, just like his older siblings were busy doing. There was no time to lose. He had a taste of the active student life when he just got started, but that turned out to not really be his thing. He invested his time more heavily in studying physiotherapy. He would go out for a drink with some fellow 'southerners' occasionally, though.

After an internship at a military hospital, he decided to stick around for ten more years. This was his first real job. He did not stop learning, though. He followed many more post-HBO studies like Manual Therapy and Osteopathy. He also learned about treating people suffering from Parkinson's disease.

As said, Christien and Paul are very active people. This shows not only in the long list of sports they told us they liked but also in the fact that they own their own physiotherapy practice. Christien's main occupation is handling human resources and next to that she gives hydrotherapy on a weekly basis. Paul puts his knowledge of manual therapy and Parkinson's treatment to good use.

Christien has another job, besides the practice she owns. She helps children who trail behind their peers in fields like communication. Her aim is to enable them to properly express their feelings. It is an emotionally rewarding occupation, something she highly values. That is also the reason she speaks with pride about the socially responsible character of Ikie. Her daughter might not have inherited the exact, numbers-loving side from her, but when Christien speaks of how Ikie has been busy linking WWF to Asset | Econometrics, her face lightens up. When discussing the active character of Ikie, she reminisced about the time they spent together in the backyard doing Pamela Reif workouts, during lockdowns

in the past years. They also love going for a new year's dive in January, starting the year fresh by diving into ice-cold water.

They believe Ikie has been a good fit to be Asset | Econometrics' External Affairs representative for the past year. Of course, we believe so too.

We want to thank all four parents, Henk Jan, Lisette, Paul, and Christien once again for their participation and their time. They had some great stories to tell us and we look forward to introducing you to the parents of our other board members. ●

Nienke

Ikie

10+

Using Econometrics To Analyze a Drug-Selling Gang's Ledger

Christoph Walsh
"I am an assistant professor in the econometrics group of the EOR department. I am originally from a small seaside town called Tramore in County Waterford on the Southeast coast of Ireland. Tramore literally means "Big Beach" in the Irish language. I then did my Bachelor in Trinity College Dublin and then my PhD at Boston University, USA before moving to Tilburg in 2018."

In each of these columns I will talk about one of my research papers. For the first one I will talk about a project I did with some researchers I got to know through my time in Boston.

For this project, we were very fortunate to obtain access to the accounting ledger of a large former drug-selling gang. The ledger was quite old - from the 1990s - but it was very detailed. This gang operated as a kind of wholesaler, importing the drugs from abroad and then selling them on to drug dealers. These dealers then sold the drugs on to consumers. The ledger contained every dealing the gang did with these dealers. For each trade with each dealer, we could see the quantity, quality, sales price to the dealer, and cost to the gang.

We were also able to see what records the gang kept on these dealers, such as what addictions they had or if they were in debt. It turns out the gang charged different dealers different prices (price discriminated) based on this information. They charged a higher price to those with addictions or those in debt because they knew they were more desperate for money. We then wrote down and estimated a model of Nash bargaining between the gang and these dealers which was able to reproduce the price discrimination patterns that we observed in our data.

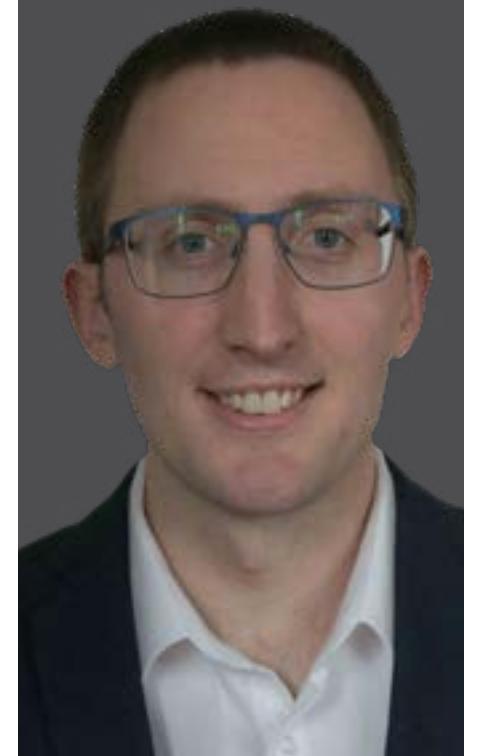We then used our estimated model to see how different law enforcement interventions affect prices and quanti-ties in the market. In the middle of the sample period, the authorities managed to raid the "jockeys" that were importing the drugs into the country. This raised the gang's costs of importing the drugs. We then used our model to see what would have happened if this raid had not occurred. We found the gang raised the prices for dealers with less bargaining power (those with addictions and money problems) more than those who the gang relied on more (those with connections in the local nightclubs and brothels). Even though the prices were higher for some time after the raid, it had almost no impact on quantities. This was not surprising, because it is well known that the short-run demand for drugs is inelastic. The market prices for consumers increased, but they still demanded similar quantities.

We then used our model to compare this approach to the authorities targeting the dealers themselves. We found that this would have been much more effective at lowering quantities, especially if they targeted the dealers working in nightclubs, who typically bought the largest quantities. This is because the gang was not able to hire new dealers very quickly in response, and the remaining dealers did not want to increase the amount they bought to make up for the shortfall in supply. This is because getting caught with a large quantity of drugs would have resulted in a much longer prison sentence.

If you are interested in reading the paper, you can find it on my website at walshc.github.io ●

Words Are the Recipe for Modern Art

written by **Martin Kubíček**

If you are interested in the research of artificial intelligence or simply scroll through the trends on social media, you probably already know that we live in times that were decades ago portrayed as science fiction. Nowadays, the fuss is about image-generating programs as there are three major competing teams, one of which is endorsed by Google, showing that the researched field is probably onto something.

From picture to words

It is a known fact to every internet user that has seen a CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart), that computers can learn. The program has been taught to recognize objects from pictures, through a large number of repetitive inputs, leading to the ultimate understanding that certain combinations of pixels represent objects like a car or a traffic light. Hence, CAPTCHA can reliably identify a bus in a picture and state its observance in words.

But is it possible to do it the other way around? Can we input a computer a word or a prompt, and have it output a coherent unique image? With the increasing computer power and improvement in neural networks leading to more efficient machine learning, the latter question has become more and more relevant. The appeal of creating a unique image from a single prompt is captivating to anyone who can grasp the basics of the concept.

Too many variables?

In the last seven years, since the first text2image software was asked to create an image of a green school bus, likely a never-before pictured image, the technology has made major advances. The first obstacle on the way was to introduce the program to a large training data set of pictures, and have it slowly but steadily understand the relation between the given images and their prompts. In the end, a picture to a computer is only a combination of RGB values without any meaning, in mathematical terms, it is like a partitioned matrix. Since the final objective is to have the program generate brand-new art and not just copy the previously available pixels from the given data set, the training step is particularly important.

As the software betters its understanding of what is in the provided pictures by matching the selected data set images to its correct prompts, it eventually assigns every picture a set of values based on its arbitrarily chosen variables. Think of the variables as axes for "roundness", "yellowness", "reflectivity", and many more that can be used to effectively describe every object in existence. Imagine a multidimensional space, let's say 500 dimensions, where the software accurately locates and sorts every image it encounters. This concept is called latent space and the better the architecture of the software's latent space, the more the program comprehends the pictures.

The hardest part of every project is scale. The green bus was a picture as small as 32x32 pixels, but nowadays these programs create images even in 8K resolution. Therefore, the software needs to operate with a much higher order of magnitude of variables, to portray a bigger image. And I am not even mentioning the complexity of the given prompt, which can extend to a paragraph of unrelated listed terms. The process described is called deep learning

China, Economic Collapse, Real Estate Crises, Photorealism *by Martin Kubíček*

and takes the most time to perfect. With progress, the computer faces challenges of understanding even the smallest of nuances such as linguistically ambiguous phrases like a "pair of glasses".

What is now on the market?

Ever since its open Beta release in July, Midjourney, the only publicly available software as of now, has been used by almost four million Discord users. Aside from Midjourney, there are many other alternatives such as Google's Imagen, or DALL-E 2, but this article will focus only on Midjourney since the best way to understand the generation process is to create your own AI art.

Firstly, you must know that once you set up your discord server and connect to the Midjourney server, all you need to know is the command "/imagine" and your creativity to come up with a well-crafted prompt to visualize whatever you want. Once you do so, Midjourney will present you with four different rough takes on your wished prompt, which gives you more choice in the creation of your final masterpiece. This is possible because of the generation process called diffusion.

Late Night, Snack, Run *by Martin Kubíček*

'I believe that the future of AI is bright'

Since the given prompt represents only a single point in the multidimensional latent space, one would expect the software to generate one specific image on every occasion the exact prompt is entered, yet this is not how diffusion works. Shortly, Midjourney creates its pictures out of noise, think of static tv, which it cultivates into the requested image over multiple iterations. The sole reason for the uniqueness and slight variety of the multiple images originating from the same input comes from the factor of randomness, as the diffusion from the noise is never the same.

Once your four drafts of the image are created, you can either proceed to the selection of one and have it upscaled in more detail, or create a whole new set of four. To understand the capability of the public Midjourney version, keep in mind that the latest research is a few steps ahead, please see the connected images created based on my prompts.

And what does the future hold?

In the short term, the most heated debate revolves around the future of the people who create art for a living. Automated AI generation is effective in both time and cost and can convincingly replicate the style of past and contemporary authors. On the other hand, AI generation can be perceived as a new form of art creation, where finding the correct prompts to achieve the desired image quality is a skill on its own. We are, therefore, on a path toward art liberation, where the only boundary is one's eloquence.

In the long run, the research is only in its inception. In only two years, the research will be leaps and bounds from where it is now, and art generation may not be even its major focus. The question is whether humanity will find more utility in the diffusion and deep learning methods, but after Open AI was able to create protein folding software on the pillars of an algorithm that self-taught chess, I believe that the future of AI is bright. ●

Bridgerton Quote *by Martin Kubíček*

Organizing the First and Only Rail Trip

Committee perspective

Hi, my name is Selina Bötzel and I am the Treasurer of the Rail Trip committee of Asset | Econometrics. This year, the first and only edition of the Rail Trip took place. As the name suggests, we travelled by train. On October 6, we left with a group of 25 econometricians for Hamburg. October 7, we continued the journey to Berlin where we stayed until October 10.

The Rail Trip committee started in February, to show that you can travel more sustainably. The committee consists of Cas Eegerdingk, Patrick Floor, Tom Pfeiffer, Juliëtte Tillie, Ids de Vries, and me. We immediately started looking for locations. This was more difficult than expected because you cannot book all train tickets far in advance. For example, the Thalys could only be booked three months in advance, so this would be too uncertain. In addition, travelling by train is also very expensive in comparison to flying. Which is unfair since we have already reduced 11,573 kg of CO2 emissions with our trip.

We wanted two locations, as we felt that was appropriate for a trip by train. So, after a long search and considerations, we ended up with Hamburg and Berlin. We chose these locations because they were easily accessible, both cities had a lot to offer, and it was possible to book those train tickets early. We quickly found hostels and with

our motivated committee we had a lot of ideas going forward. Our committee also immediately had great chemistry, which is reflected in our record time in the escape room we participated in as a committee activity.

I was responsible for arranging Thursday and Friday. For Thursday, Tom, Tillie and I put together a fun and interactive scavenger hunt, so everyone saw the highlights of Hamburg. We did this via Google Maps Street view, and luckily it all went well. The end point of the scavenger hunt was the restaurant where we had dinner. This was a quest to arrange, as we emailed/called about 25 restaurants and only received two responses. In the end, we chose to eat hamburgers in Hamburg. After dinner, everyone went to get ready for the pub crawl, which Tom, Tillie and I had arranged ourselves. This was a great success, in part due to the traditional Hamburg shots with tabasco and tomato juice.

Together with Cas, I was also responsible for Friday's planning. We started the day early with a canal cruise, as Hamburg is known as Little Venice. Unfortunately, the water level was too low so we could not sail through the city, but we learned a lot about Hamburg's port. Then we went to a chocolate museum, where we learned and tasted the whole process of chocolate making. Late in the afternoon, it was already time to go to Berlin. In the evening, the Festival of Lights took place in Berlin. We were very lucky to be there just that weekend. After the evening city walk, we went on to a club: the Matrix.

Saturday we had a bicycle tour, with Patrick and Ids as guides. We went through a very big demonstration right away. Fortunately, this did not hinder our program and we also saw this side of Berlin. In the evening, we had dinner at a restaurant near the hostel, where we had a private room called the Dungeon. Apparently, they were not used to having large groups as they could only cook two pizzas at a time. Besides that, we had a great time and plans were being made for the free evening. Unfortunately,

getting into clubs was a challenge and several were refused entry for the strangest reasons.

Sunday, we started the day with free time so everyone could get some extra sleep. In the afternoon, we went for a drink in a beer garden with the committee. Then, we went to the Memorial for the Murdered Jews of Europe and the Reichstag. In the evening, the plan was to have dinner and drinks at a beer garden, but unfortunately when we arrived it was closed. Luckily, there was an Asian restaurant opposite the beer garden where we ended up eating nicely. Late in the evening, we went to the Matrix, as the Matrix is a popular venue on Sundays.

After checking out on Monday, we went for a picnic in the Tiergarten. Cas, Patrick, and I went to get the groceries. This was a bigger job than expected. After the picnic, everyone had free time to score the last souvenirs. Then it was time to head home. While on the way home, we suddenly heard that it was no longer possible to continue to the Netherlands. Luckily, another option was already being announced. The only downside was that we had no reserved seats there and the train was already overcrowded. But all in all, I thought travelling by train was a great success; it is much better for the environment, and it is comfortable. ●

Visiting Hamburg and Berlin on Rails

written by **Selina Bötzel**

Participants perspective

The 7.03 hours intercity to Zwolle from platform one. This train meant the beginning of our Rail Trip to Hamburg and Berlin. I liked the concept of visiting more cities and doing so by train, because I really prefer to travel this way over travelling by plane. Moreover, Hamburg and Berlin seemed like very interesting cities which I had not visited before. All this made it the perfect opportunity for my first Asset | Econometrics trip.

At 6.45 hours in the morning, we were present at the Tilburg central station and the Rail Trip was about to start. After a prosperous train ride, which was filled with nice talks and a lot of games, we arrived at Hamburg Hauptbahnhof at the beginning of the afternoon. Soon we began our first activity: a scavenger hunt through the city of Hamburg. It was a nice way to get a view of the city and it resulted in some funny pictures as well. The nice thing about Hamburg was that, in contrast to Berlin, I did not know so much about the city, so I was really impressed by the beauty of the city and the overwhelming buildings. After having dinner together, we went back to the hostel to prepare for the evening program. This evening consisted of a pub-crawl in the city of Hamburg. That night, we visited several pubs, and we ended the

evening in the local karaoke bar, where they, despite several tries, were unable to play Dutch music. Altogether it was an amazing night, which brought us some great stories.

The next day started with a boat trip in the port of Hamburg, which was quite a challenge for some people, because of the heavy prior night. Luckily, I only lost my voice in the karaoke bar the night before, so I was still able to enjoy it. I must say, it was really impressive to pass enormous cargo ships so closely. After the boat trip, we went to the 'Chocoversum', a chocolate museum in which we got the chance to taste the chocolate at every stage of the production process. Although I could do without the experience of eating a raw cacao bean (it was really disappointing), it added a nice extra dimension to the tour. When the visit was over, we packed our luggage and set course for our next destination of the trip: Berlin. Most people spent their train ride catching up on some sleep. However, I spent the time playing games with some people. The drawing game was especially popular, one in which we could put all our inspiration from the previous evening to good use. Once we arrived in Berlin, we first had a look at our hostel. It was located on a campsite and rather than in rooms, we slept in nice 4-person cottages. The only downside was

Maik Maas

Bachelor EOR

Age: 19

our encounter with a rat later that week. We were lucky since the Berlin Festival of Lights was being held during this period. It was an extraordinary experience to see the buildings with various projections on them. Before returning to the hostel, we ended our night in a techno club. Such a visit to the techno capital could not be missed.

On the third day of the trip, we were going to explore Berlin a bit more extensively, by bike. The advantage of exploring the city on two wheels was the freedom to take a break to visit places. Furthermore, cycling through Berlin was an adventure in itself. The bike tour led us past locations such as Checkpoint Charlie and the Berlin Wall. Later that day, we had dinner together and we prepared to go explore the city even more. Unfortunately, this idea remained to be only an attempt. On the way to the city, we lost half of the group and later we decided to return to the hostel (Rein, I am sorry). Then, however, we ran into the next
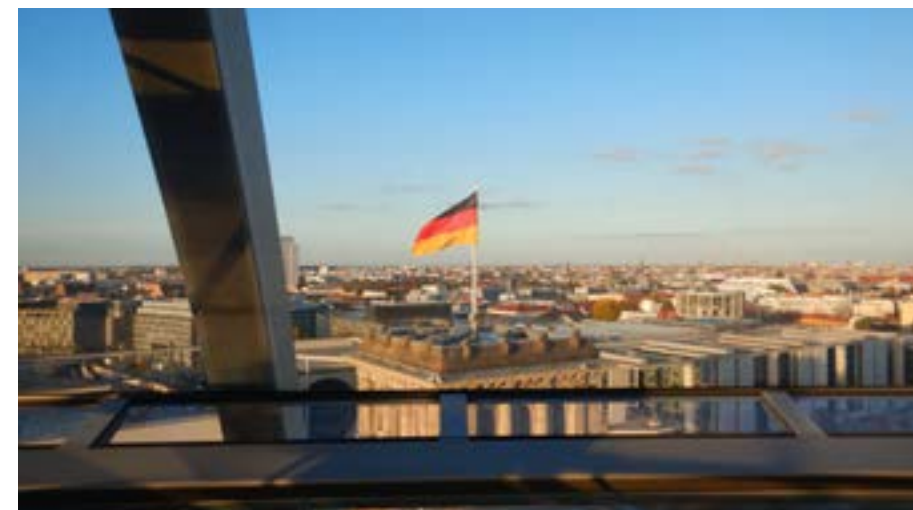
problem. Someone fell asleep inside the hostel cottage, with the key lying inside. This turned out to be an evening, which also other people on the hostel site can still remember. After playing some sounds and alarms to wake him, we moved on to more severe measures. We slammed into the wall and tried to hit him with a branch. After many attempts and some angry neighbors later, someone ended up jumping on the roof of the cottage.

The next morning – the fourth one already – we had some spare time. We took this opportunity to eat our first real German schnitzel of the trip in a typical cozy German restaurant. Then, we went to the memorial of the Murdered Jews in Europe, which left a big impression on me. The special appearance the monument had, accompanied by the stories of our guide, as well as the information in the exhibition, made you fall silent. Hereafter, we visited the Reichstag, which was located nearby, the German parliament building. In this building, we took a walk to the top of the modern glass dome. I did not have any image of this, but it was a special experience to walk inside the glass and mirrors that hung there. It felt a bit like an optical illusion. At the top of the building, we had a wonderful view of Berlin, which became even more special, thanks to the golden

hour. We ended that day with dinner in a Korean restaurant.

The fifth day of the Rail Trip was the last one. Our train back to the Netherlands departed at the end of the afternoon, which meant we still had some time left in Berlin. This time was filled with a nice picnic in Tiergarten Park. This picnic was followed by a last small walk, through Berlin, during which the last souvenirs were purchased. Around 17.00 hours, we boarded our Intercity train to Amsterdam as the last part of our Rail Trip. However, this would later turn out differently. Around 19.00 hours I was

planning on eating at the train restaurant with a group. The restaurant looked fancy, and I was really looking forward to it. Just when it was my turn to order my delicious looking pumpkin soup, I heard the intercom shouting: "… in Minden aussteigen". Apparently, Minden was the next station, less than ten minutes away and our train was going to be canceled. This meant the end of my pumpkin soup order. This was followed by an intense journey through the train back to our compartment: the train was packed with Dutch people trying to get their suitcases together in a hurry. Passing these people appeared to be a huge challenge and after having heard that "today's youth have no patience" multiple times, we were able to join the group again. In Minden, we took the train to Duisburg, where we could take another train to the Netherlands. The only problem was that this train was extremely crowded, and we did not have reserved seats here, which made us stand on the floor. Luckily, the board restaurant was nearby and in the end, with some nice games, we still had a successful return trip. After all, what is a Rail Trip without any railway disruptions?

Finally, I want to thank the committee for their efforts to organize this amazing trip and the other Rail Trip participants for making this trip unforgettable. ●

Standing at the Intersection of Politics and Science

written by **Floris van de Moosdijk**

On October 24, we had the pleasure to speak to prof. dr. Bas Werker at the Department of Econometrics and Operations Research. You may know him from the lectures on Quantitative Finance. Aside from his duties as a full-time professor at Tilburg University, Werker is actively involved in politics within D66 and as a member of Netspar (Network for Studies on Pension, Aging, and Retirement). We were specifically interested in his political responsibilities next to his work at Tilburg University and his views on the connection between research and politics.

Werker had been interested in politics for many years. When in 2010 he realized he could contribute more to society than just with his work in the familiar academic environment, he became chairman of the board of D66 in Tilburg, and later in 2013, he switched to the chairman of the regional board of D66 of Noord-Brabant. In his role as chairman, Werker's biggest responsibilities include the creation of an electoral list for the provincial elections and the publication of an election program. In national politics, he was involved in reflecting on the last D66 election campaign. Next to that he joined, the then recently established Netspar research institute to do socially beneficial research about Pension, Aging, and Retirement. Even though Netspar is closely linked with politics, his role at Netspar is one of a researcher. Werker thinks it is very important to clearly distinguish between these roles. As chairman, he has a political role and at Netspar he has one of a scientist.

Werker sees that sometimes in politics, decisions do not comply with the economical insights we have. An example he mentions is the recent situation in the United Kingdom, where in his view economic theory was completely ignored by the proposal to implement significant and unfunded tax cuts and increased spending. An experiment that turned out costly for

the United Kingdom, an outcome we could have predicted. Werker notices that politicians sometimes question the ethics and desirability of economic insights, causing the new policies to not always take these findings and theories into account.

Politicians are of course not obliged by law to take scientific results and theories into account when making policy. Therefore, he thinks it is important for scientists to keep a role in which they do not decide which political decisions are right and which are not, but one in which they explain the consequences of certain policies. As a scientist for Netspar in the pension debate, he tries to clarify the role of science to all parties involved: "The only task scientists have is to explain consequences of choices, so everyone realizes what they sign for". Werker sees these roles get mixed up from time to time when scientists are very outspoken about their opinions on political issues. He says that he is very careful with these kinds of statements, so he can keep a certain level of neutrality, while at the same time being openly active within D66.

While Werker spends a significant part of his time on political and social involvement, we should of course not forget that he spends the (slight) majority of his time at the university. Here, he gives lectures, does fundamental research in financial markets and

Bas Werker

in mathematical statistics, writes papers, guides students and so on. He likes that just as much and would be unhappy if he would only be able to spend time on either teaching, research, or politics. ●

Bert & Ernie Questions

Bert or Ernie	**Ernie**
Ski vacation or Carnival	**Carnival**
Do the dishes or Do the Laundry	**Do the dishes**
Christmas or Easter	**Christmas**
Ice cream or Chocolate	**Chocolate**
Hotel or Camping	**Hotel**
Swimming pool or The sea	**Swimming pool**
Skydiving or Bungeejumping	**Skydiving**

Meet the Board

Summer board of Asset | Econometrics 2022-2023

Chairman

Hi everyone, my name is Luc Geurts, I am 21 years old and I am the Chairman of Asset | Econometrics. Next to this, I am the Treasurer and Vice-Chairman of Asset. I was born and raised in Eindhoven before moving to Tilburg to study the EOR Bachelor in 2019. I became active at Astrics during my second year in the Europe Trip committee and have also been in the EPD committee before I started my board year. Next to this, I enjoy playing football and have been playing at T.S.V.V. Merlijn, where I also have been active in some committees. In my spare time, I enjoy playing different sports but also reading a book or cracking my brain on some puzzles. A fun fact about me is that I have had eight concussions during my life. I hope to see you at many of our events and of course at the rooms!!

Secretary

Hi! I am Juliëtte Tillie, the Secretary of our beautiful association Asset | Econometrics for the upcoming academic year. Being 23 years old, I am the oldest and wisest of the board. I was born in Eindhoven but raised in a small village near Roermond. After high school, I moved to Tilburg and started a study at Fontys Tilburg. However, I quickly realized that I missed mathematics. For this reason, I visited the open day of Tilburg University and shortly after started the Bachelor EOR. I immediately became active in the Lustrum Trip committee and enjoyed many other committees as well over the years. By now I have had almost every role in the Nekst committee possible, including being its coordinator this year. I am looking forward to releasing four beautiful issues of our beloved magazine and doing many more things for our association. Hopefully, you will enjoy our many events and other opportunities. See you soon at the rooms!

Treasurer

Hello there! I am Matthijs Kroesen, the Treasurer of Asset | Econometrics in 2022-2023. I was born and raised in the most beautiful town in the Netherlands (Hilversum). Fortunately, I am not as old as my fellow boardies, since I am only 20 years old. I started with Econometrics & Operational Research in 2020, and I immediately became active at Asset | Econometrics in the Europe Trip Committee. The year after, I explored my journalistic and artistic interests with the Nekst and the Yearbook Committees. Besides that, I have also met quite some friends at Asset | Econometrics. This year, I hope to be the healthy financial heart of the association.

External Affairs

Hi! My name is Meike Goedschalk and I am 23 years old. I was born and raised in the most beautiful city in the Netherlands, named Bergen op Zoom, which is close to Zeeland; that is why I like to go to the beach that much. Furthermore, I like to go out with friends, take a walk and watch several sports games. I have been active in several committees; the Yearbook committee, the Active Members Day committee, the Europe Trip committee, and last but not least I have been the Design Officer of Nekst last year. That is why I am the Design expert of the board. I am very excited for this year, meeting new people, new companies, and setting up great events. I hope to see you all at our board rooms and events!

External Affairs

Hi! My name is Ikie Leunissen and together with Meike, I am the External Affairs of Asset | Econometrics for the this half year. I am 21 years old and was raised in Hulsberg. In 2016, my parents and I moved to the beautiful hamlet Waterval, which is close to Maastricht. Since 2018, when I started studying Econometrics and Operations Research, I have been living in Tilburg. By now I have almost finished my Bachelor; the only course I still need to pass is (of course) Statistics for Econometrics. Furthermore, I am currently following some Economic courses to be able to do the Sustainable Development Master of Economics as well. In my free time, I like to do sports like jogging and fitness. On the weekends, you will be likely to find me in the city center, shopping with friends. I became active at Asset | Econometrics in my second year and the EOR Business Dinner committee was my first committee. Sadly, Covid-19 got in the way and the dinner could not take place. Luckily, I was given the opportunity to join this committee again and in October we pulled off an amazing event! I am really excited about how the first half year went and also am really proud of all the events we pulled off together! See you at our activities and at the rooms :)

Internal Affairs

My name is Nienke Keuning and I am the Internal Affairs of Asset | Econometrics. I was born in the beautiful city of 's-Hertogenbosch 21 years ago. I lived there most of my life apart from 2010-2013. During that time I lived in Poland with my family. There, I finished my elementary school at the International School of Poznan surrounded by other internationals. I loved living in Poland at a young age and experiencing another type of teaching and life. One and a half years ago, I moved to Tilburg because I wanted more of the student experience. At that point, I was already studying for over a year. I started my EOR Bachelor in 2019 and I am now a fourth year student. Asset | Econometrics has been a part of my student life from the start because I immediately became an active member of the Promotion committee. I also participated in the Active Members Day committee, the Nekst committee, and the Connection Day committee. Besides studying, I like to play tennis, hang out with friends, and most of all, play a lot of board games. A fun fact about me is that I love the movie Clueless and my favorite cantus song is 'Jan Klaassen de Trompetter'. This year, I hope to meet a lot of new members at our rooms and events and mostly enjoy my time as 'boardie' to the fullest.

B·O·A·R·D

TO

B·O·A·R·D

So no one told you a board year was gonna be this way? (insert four claps here) You might be wrong! The old board will tell you everything! In the Board-to-Board, you can read all the answers to the questions your current boardies asked their predecessors. They tried to get all the juice and asked the relevant questions… like what kind of pet you would choose. Unfortunately, Bram was not able to join us, nonetheless we hope you will enjoy reading about their challenges, personal opinions, and more in this article!

written by **Juliëtte Tillie**

Which decision was, in your opinion, the best?

Semester 1:
Joris: Prince Pils!
The others: No…
Patrick: No guys, I think the Corona Goodbye party.
Floris: Maybe letting AMW go through?
Patrick and Joris: Yes, that could actually be it.
Wout: I think giving a discount on the dashes.
Everyone: But seriously, AMW.

Conclusion: Letting AMW go through.

Semester 2:
Ikie: Going on EUBT with everyone
Joris: The ties!
Ikie: … and the chokers!
Floris: I think calling ties our best decision of the year, makes us look like we are SBIT (other Asset department).

Floris: Asking the members to help with the pubquiz when everyone but Nienke had to go in quarantine.
Nienke: I think it was the best decision to only let me go and let the event go on. It was one of the sweetest comments when Emma came to me at the end of the event and she said "usually we would tease you at the event, but we did not do that since you were the only boardie".

Where do you see your boardies in ten years?

Floris:
Patrick: I see Floris on a sales department.
Joris: I think Floris will work at Friesland Campina.
Nienke: Somewhere in a country far away earning money and then putting his feet in a pool.
Ikie: Floris has already been working at Spotify for ten years.
Floris: Oh I genuinely want that!
Patrick: And then he makes sure Gaga is on the first place on the hit charts.
Joris: I think Floris wants to work at Spotify but ends up working at SoundCloud, just not quite it.
Constantijn: Still at a Statistics lecture.
Wout: I see him at Starbucks having another *havercapu*.
Floris: I MADE YOU TASTE IT AND YOU LIKED IT!

Joris:
Iedereen: Stay at home husband for Tillie.
Meike: Cleaning man.
Floris: Stay-at-home man and besides that a Treasurer for the regional swimming association.
Everyone: Agreed.
Patrick: He will have a good paying job. Somebody has to bring in the money because Tillie wants to work at WWF.

Constantijn:
Joris: Actuarial
Luc: At the calculating room of the Dutch Bank. So he does not get out of his cellar.
Patrick: And he does everything in the household of Stans.
Luc: Parttime hockey analyst.
Wout: Fulltime dog walker.
Floris: And Snapchat vlogger.
Patrick: Maybe he is secretly a vlogger about the financial world…

Wout:
Luc: Wout will have a stupid job just to earn some money.
Constantijn: Debt collector!!!
Patrick: But he will earn money.
Iedereen: Barney!!!
Iedereen: The wolf of Wallstreet!

Patrick:
Meike: He will be late everyday because of FOMO (Fear Of Missing Out).
Ikie: He has still not seen a dentist.
Patrick: No, I have an appointment!
Floris: Developing an application against FOMO.
Nienke: In the Boeka or Polly, because he heard that somebody is there.
Meike: Still going out with Astrics.

Bram:
Constantijn: At Tilburg Building Blocks or Anago
Wout: *Insert brabants office*
Constantijn: Just an econometrics company in Tilburg.
Everyone: Worstenbroodjes!

Nienke:
Patrick: A mom.
Constantijn: Hahaha a mom!
Wout: I would say: Nienke as a nun.
Patrick: But what will Siebe be?
Wout: That is over.
Joris: No, I think she will still be with Siebe. Nienke will still live in Den Bosch and she will probably work at a company in Den Bosch.
Ikie: Siebe is a God.
Luc: I see her being super involved in a neighborhood.
Meike: You will be a mom who will go into the parents council.
Ikie: Or a volunteer at a musical theater.
Floris: 'Overblijf' Mom
Nienke: Hey guys, I do study Econometrics!

Ikie:
Luc: Ikie works at My Jewellery
Nienke: Or at WNF; a non-profit association, and has also her own clothing line.
Joris: Parttime bird watcher.
Wout: She will be the new Tinder Swindler, I think that would be something for her.
Meike: Yes, and then only people with a certain status.
Iedereen: Yes, a gold digger!
Wout: I see her being a Tinder Swindler in combination with fashion.

PATRICK'S -HOME-

Who was the 'father' or 'mother' of the group?

Constantijn: Bram I think?
Wout: Wout.
Joris: I think Bram or Patrick.
Floris: Not Patrick! I think of myself more as a father than Patrick.
Constantijn: I would say Bram or me.
Joris: I think Bram too. Wait, I do not know why actually, Constantijn is more boring…
Constantijn: Because I cared less about what happened to you guys.
Floris: What is a father then? Why do you think Patrick is a father figure?
Joris: A father is someone who takes care of the rest.
Floris: But nobody did that.
Luc: So then there was no father.
Everyone in conclusion: There was no father.
Floris: We were just an orphanage with six men.

Joris: The second semester I am sure it must be Ikie.
Ikie: No I think Nienke. She was like "Oh watch out or you will fall!".
Joris: … Nienke continuously fell herself… Ikie thinks about giving everyone presents.
Ikie: That does not mean I am a mother, it just means that I am social.

Conclusion: Ikie

What was your Central Perk chilling spot?

Everyone: Patrick's home
Joris: If we could not hang out at Patrick's house we hang out at Rico or Siebe's place (Patrick's roommates)

What is your themesong?

Everyone: Waanzin by Don Quichote!

Coffee or tea?

Joris: Everyone who is a coffee addict is going through life as a zombie. If you can live without caffeine you are truly free. TEA!
Wout: Coffee, fun fact, I have been drinking coffee since I was 13 years old.
Joris about Wout: Double espresso!
Patrick : Tea!
Floris: People who do not drink coffee miss a dimension in their life.
Constantijn: Coffee.
Nienke: Coffee.
Ikie: Tea.

Would you rather have a monkey, a smelly cat or a chick and a duck?

Before everyone gets the question they have to watch the music video of Smelly Cat.
Floris: Put on the Lady Gaga version!

Nienke: A chick and a duck.
Patrick: I would rather have a monkey because I hate cats.
Wout: A monkey.
Constantijn: A chick and a duck.
Joris: A monkey.
Floris: Smelly Cat.
Juliëtte: Because of Gaga?
Floris: Yes, haha, and because Rachel would have a cat and I am rachel.
Ikie: A monkey!

With whom would you not be able to live together?

Nienke: Floris because you do not like to sleep together.
Wout: Joris (They live together).
Constantijn: With Patrick, it would just be too much chaos.
Joris: Patrick, I cannot hear all those jokes all night.
Nienke: I think Patrick would have to live together with someone for the social interaction.
Patrick: With Wout, I would be too annoyed by all the mess.
Ikie: Me too!

Econometrics in Practice Day

written by **Timo Klabbers**

The Econometrics in Practice Day is for most students the first formal activity they go to. Last year, it was an inspiring day that started with presentations, a wonderful lunch, and topped off with an interesting case. Something that we would want to organize ourselves to inspire other students. No sooner said than done, because together with our committee, we organized the EPD 2022.

The EPD committee is responsible for organizing this day and throughout the year, we had meetings to create the perfect EPD. Right at the start of the committee in February, we had to decide on the structure of the event and the location. We were all very enthusiastic about the idea that there might be a possibility to organize the EPD at an external location, so we searched for many locations. The outcome: The EPD 2022 would be organized in Cinecitta Tilburg, which is the oldest cinema in the Netherlands!

After setting the location, it was time to look for interesting companies and to find a guest speaker who wanted to do the opening. One of the advantages of the EPD is that it is a very broad event in the field of Econometrics, which means that we looked for companies that suit every Master's direction that our university offers: 'Econometrics and Mathematical Economics', 'Business Analytics, and Operational Research' and 'Quantitative Finance

and Actuarial Sciences'. This is ideal for both Master's and Bachelor's students since participants who have not decided on their track yet can get a taste of every Master's direction, while others can connect with the companies of interest.

We invited Jelle Wouters from The Royal Netherlands Marechaussee as a guest speaker. This organization is not something that you would initially connect with statistics or mathematics at all. But that is where many are wrong, so Jelle showed us the importance of econometrics within their organization and how this could affect our society. Furthermore, he talked about how data science is used to identify patterns and behavior from travelers and suspects.

After the opening speech, we had some interesting companies for the presentations in the morning, followed by the companies that prepared a case in the afternoon. Presentations were given by Ortec Finance, Viggo, Ahold , and Capgemini, and the cases were organized by IG&H, PwC, and WTW. The companies were selected such that for every Master's direction there was a good fit with a company. Cases in the afternoon were fun to work together and to get a feeling of your future contribution to companies. There was also an opportunity to get to know the companies better in an even more personal way, namely during the lunch and during the speed dates that were held at the same time as the presentations. All participating companies of the day were present with the speed dates, and

we even had an extra guest for the speed dates, namely Probability & Partners.

At the end of the day students and employees of the companies had the opportunity to talk in an informal setting during the drink. Also, a photographer took professional photos for your resume or you could use it as a LinkedIn profile photo. This was ideal for everyone who did not have a nice photo yet.

Besides organizing the event, we also met up to do some fun activities with our committee. We started with an escape room in the city center of Tilburg, which was maybe a bit risky since we did not know each other that well, but eventually, we got through the game hand in hand. Even the darkness could not stop us. Thereafter, we had a committee date together with the Econometric Business Dinner committee and the Rail Trip committee, with whom we ate pizza and played Floenky ball in the Spoorpark. Lastly, we tested our culinary skills by cooking lovely ravioli together. In the meantime, we have planned our board dinner and some other activities, which will take place soon.

All in all, we are satisfied with the resulting event that we have organized together. It was amazing to work with our committee to set everything up from the start and to be part of this journey.

We hope you enjoyed the EPD this year as much as we did! ●

… Taiwan!

Hello everyone! Currently, I am roughly 10.000km away from our beautiful Tilburg. But it is an honor to still contribute to the lovely Nekst. My exchange is halfway down as I write this, but I have already experienced so much!

It all began with eight days of quarantine hotel. After being disinfected five times and COVID-19 tested four times since arriving in Taiwan, I arrived in my hotel room. Desperate for some fresh air, I found out the windows were locked. Otherwise, of course, I would breathe out COVID-19 to Taiwan. I thought I could relax and get used to Asian food. But the food I got served was very weird. I got many soups with a lot of big bones in them and lovely stinky tofu. I was wondering what I was going to eat here for the next semester. Luckily, when I finally came outside, the food was amazing. From fried beef noodles, moon cakes, dumplings to sushi, every local Taiwanese restaurant tastes amazing.

Another thing that I immediately noticed: there were bicycles everywhere. I thought the Netherlands was a country with many bicycles, but wow, at my university here there are even more. The difference is that it is way more organized here. Every bike is registered and has a sticker with a barcode and the name of the owner on the bike. If the

local 'AFAC' removes your bicycle, because you parked it wrong, they will call you to let you know. But that never happens in Tilburg. Everywhere on the campus and in the city there are nice little parking squares for your bike. I have not yet seen a parked bike outside a square. The people here are so good at following rules, it is crazy. When you ride the metro during rush hour and 100 people need to go with the escalator, everybody will follow a perfect line and will stand at the right-hand side of the stairs. Sometimes you will wait for five minutes in line to take the escalator, but still, no one jumps the queue or walks on the left side.

Another weird thing about the metro is what people do while sitting in them. Many are catching Pokémons as you ride through the city, but most of the people who got a chair just sleep. They sit down and fall asleep a second later. I still do not know how they wake up in time to get out at the right stop. But napping everywhere is just normal here. The library at the university is mainly used for it and also during fifteen-minute breaks, the Taiwanese people will sleep in the lecture hall. Apparently, this was taught to them in school since they were four and punished hard if you did not do it.

Sometimes people from back home ask me if I ever feel unsafe here. The answer is no. Criminal rates in Taiwan are one of
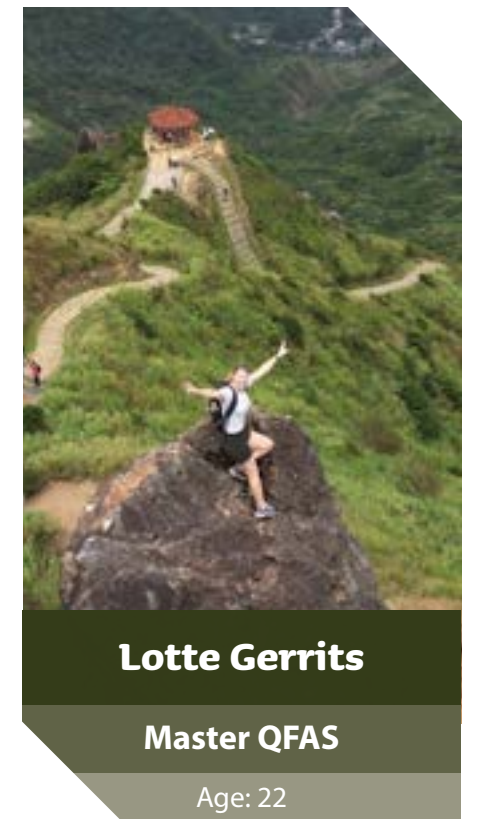
Lotte Gerrits

Master QFAS

Age: 22

the lowest in the world. I have never seen a police car with sirens, or another police related event. Doors of houses and apartments do not even lock here, which sometimes feels a bit weird. Also, scooters and bikes are just left unlocked on the streets. I think we can learn a lot from the people here. By the way, this is not fully true. I do see the police once a week in the club, when they check everyone's passports. I still have no clue why, but this maybe has something to do with the fact that clubbing is free with open bars.

Overall, the exchange experience so far has been amazing, and I have already been to a lot of very cool places during the weekends. If you want to go on an exchange, just do it! It is so worth it.

很快在荷蘭見！

"See you soon in the Netherlands!" ●

May the Odds Be Ever in Your Favor

written by **Guus van der Velden** and **Joep Adriaanse**

Are you short on cash? Maybe you should consider going to the casino sometime. Sounds like some weird advice, but while at €0.42, a cup of coffee at the campus is not that expensive, the casino beats it with a very tempting €0.00. Very few people will reject a free cup of coffee, and for those who have not reached adulthood and do not like the liquid source of energy, there are free sodas as well.

Of course, the casino hopes that, while you are there, sipping on your drink that is still too hot and possibly burning your tongue along the way, you will engage in some of their games of chance. Given the fact that their entire business model is based around these games, it will be a tough task to retain your money. Let alone to make the amount of money in your pocket grow. My personal experience is not that bad though. We try to exploit whatever knowledge we have from courses like Introduction Analysis and Probability Theory as well as Probability Theory and Statistics, to determine what number is going to pop up next on the roulette wheel. If you observe

two consecutive 'ones', you know to place your bets on one more occurrence of this event and win €35.00. We did not find the winning roulette strategy just yet.

Winning at a game like this is fun, but it is pure luck, and over time you will lose your money. If anything, probability courses will tell you to stay far away from the slot machines and the roulette tables. If you could go in there, expecting to win money, casinos would simply not exist. But maybe, just maybe, there is a possibility to gain the edge over the house. Is there a certain game, with a corresponding strategy, that turns the odds in your favor? Let us find out.

In general, the casino has an advantage over the player, called the *house edge*, which dictates what the house is expected to win, on average. The easiest example of this is with roulette, which is a completely fair game, were it not for the green zero on the wheel. In the game of roulette, a ball goes around a wheel and can land on the numbers 0 to 36, with every number being colored red or black, with the exception of the green zero. You

bet on a subset of the possible numbers, such as 'red', 'even', or just a single number. If the ball lands within your subset, you get a payoff corresponding to the size of the subset of your choice. For example, if you had placed your bet on 'even', you double your buy in, and if you bet on a single number, the casino pays 36 times your bet. However, since there are 37 possible numbers to land on, the expected value of betting on a single number is $36 * 1/37 = 0.973$, so the house edge would be $(1 - 0.973) * 100 = 2.7\%$. Similarly, the expected value of betting on one of the twofold options, being red/black or odd/even, would equal $2 * 18/37 = 0.973$, yielding the same house edge.

Roulette is not the only popular game in the casino. Another very popular game is blackjack, in which both the player and the dealer get two cards, with the dealer showing only one card, and the goal is to get as close as possible to 21 without going over. Now sadly, blackjack is not as straightforward as roulette, because there is another party involved that influences the odds. Luckily some casinos have added an optimal strategy booklet at their black-

	Dealers showing card									
Your value	2	3	4	5	6	7	8	9	10	11
11	H	H	H	H	H	H	H	H	H	H
12	H	H	S	S	S	H	H	H	H	H
13	S	S	S	S	S	H	H	H	H	H
14	S	S	S	S	S	H	H	H	H	H
15	S	S	S	S	S	H	H	H	H	H
16	S	S	S	S	S	H	H	H	H	H
17	S	S	S	S	S	S	S	S	S	S
18	S	S	S	S	S	S	S	S	S	S
19	S	S	S	S	S	S	S	S	S	S
20	S	S	S	S	S	S	S	S	S	S
21	S	S	S	S	S	S	S	S	S	S

jack tables. The optimal strategy in blackjack depends on the total value of your cards and the showing card of the dealer. While you can choose to get all the cards you want, the dealer gets new cards until he has at least seventeen. Using this we can create the best strategy to decrease the house edge as much as possible. For simplicity, we say that you can only hit, get an extra card, or stand, and get no more cards.

Using this basic strategy can make the house edge as low as 0.5%. However, people are not perfectly logical, and going to the casino just to follow a strategy booklet is pretty boring and most certainly not what you go to the casino for. Therefore, consider the house edge for blackjack a bit higher than the minimum

of 0.5%. Card counting could possibly turn the odds slightly more in your favor, but at that point, playing blackjack is starting to become a full-time job rather than something you would do for fun. Card counting is also very dangerous, as it is not foolproof, and Las Vegas is not very happy to have customers who have read a book about counting cards and suddenly think they can cheat the casino. As they usually cannot lose their money.

Finally, we have the most infamous game in the casino, the one-armed bandit, and they got that nickname for a reason. When playing on a slot machine you bet money and then pray that the machine shows the right combination, five fruits in a row for example. While these machines may look fancy, they are terrible when it comes to

playing the odds. The casino installs these things and can choose a house edge. Typically, the edge ranges between 5% and 15%. Sadly, since you do not really have any way of knowing against which odds you are playing, it is best to avoid them entirely, as their best quality is the flashing lights.

So maybe going to the casino when you are short on cash is not the best idea after all. Casinos are profit maximizing enterprises, and while you might leave the place with a wallet filled to the brim on one day, you may lose it all on another. At least you do get to enjoy some free coffee while you are there. Apart from that, the only reason to go should be to have a good time with some friends. Prepare yourself for losing, in order to maintain the fun. ●

Gaining insights on pension benefits in a Defined Contribution scheme: Implementing external variables in Scenario Sets

With the pension agreement in June 2019, the foundation was laid for the reform of the Dutch pension system. Now more than 3 years later, this pension reform is getting closer and closer. Under the new legislation, the pension system of defined benefit agreements will disappear and make way for a system of flexible pension plans based on a defined contribution plan which means that the premium instead of the level of the benefit will be fixed. The trend from defined benefit to defined contribution had already taken off in recent years, partly as a result of low market interest rates. In a defined contribution, a premium is paid periodically and a benefit is purchased on retirement date with the then available accrued capital. At retirement date, the amount of the available capital and thus the level of the pension benefit depends on the results on the investments during the accumulation period. To gain insight into the level of the pension benefits, a scenario set can be used to provide an estimate of the result on investments and the pension results under different expectations. This is one of the many ways scenario sets can be used to gain insights in future uncertainties.

A practical example

Under the Dutch Pension Act, the pension system in the Netherlands will transition to a system in which the exact amount of the pension benefit will not be known until retirement date. In any case, it is important to know what to receive on retirement. In a defined contribution (DC) plan, the amount will still be uncertain at the current moment in time since the amount of the benefit depends on the result on investments during accrual. If I want to estimate the level of the benefit on retirement date, I therefore need to calculate pension outcomes under various scenarios. In doing so, multiple asset classes such as equity and fixed income will need to be modeled to get a clear picture at investment returns. A model that can approximate these values of asset categories is also referred to as a scenario generator. When creating such model, it is commonly assumed for the movement of asset classes to be depend on multiple variables such as the volatility and inflation. In addition to the discussion of which variables should be added, a second discussion is how to implement this variable in our model. Here questions arise such as: How to add these variables to our model and how to estimate the parameters in our model? In this article, I show how to extend stochastic models and add variables to ultimately arrive at a better scenario generator that provide insight in practical problems such as the level of benefit in a DC pension scheme.

Background

Economic scenario sets can be incredibly valuable in tackling uncertainties in the financial world. Scenario sets can give great insights in the possible future outcomes and allow practitioners to determine a strategic approach to various uncertainties. Even though the added value of a scenario set is clear, it can be incredibly difficult to create a scenario set of high quality. In literature, there is a significant amount of research related to generating economic scenario sets. There exist various well described one dimensional models such as the Black-Scholes and the Vasicek model, but both of these models have their own drawbacks. One of the pitfalls of both is that they assume constant volatility and assume no interaction with other macro-economic factors such as inflation. The last two years have painfully demonstrated that volatility in financial markets is variable over time and that macro-economic factors such as inflation impact a broad range of economic variables. In this article, I show how to implement stochastic volatility and external factors such as inflation to well described models. The result of this extension is that the accuracy of the scenario set increases, yielding better insight in potential future outcomes.

Model

I consider economic scenario sets consisting of forecasted valuations of various broadly-defined asset classes such as fixed income, equity and real estate. In order to obtain forecasted valuations for these asset classes, a state variable for each of the asset classes needs to be modelled over time. Even though these models might differ for each asset class, for the sake of convenience, I consider a general model where the model parameters can be adapted for each asset class specifically. The purpose of this article is to show how I can add variables to a general one dimensional model as I like. In the general model, I assume a state vector which consist of the state variable for the asset class and additional variables of choice e.g. volatility and inflation. For the basic form of the model, I assume a stochastic differential equation (SDE) with drift $\mu(X_t)$, volatility $\sigma(X_t)$, and Brownian motion W_t. Consequently, I impose a general stochastic differential equation of the form

$$dX_t = \mu(X_t)dt + \sigma(X_t)dW_t. \tag{1}$$

In case of a multidimensional state vector , the Brownian motion in the equation above will be multivariate. As is done in many financial models, for the sake of convenience and tractability, I impose a general affine structure on the drift and volatility given by

$$\mu(X_t) = K_0 + K_1 X_t,$$
$$\sigma(X_t)\sigma(X_t)' = H_0 + H_1 X_t. \tag{2}$$

Note that X_t, K_0, K_1, H_0, and H_1 are all vectors with a dimension equal to the number of state variables. Also note that for certain values of X_t, K_0, K_1, H_0, and H_1, I can obtain the well described Black-Scholes and Vasicek model. Take K_0 as a constant μ, K_1 equal to 0 such that there is no effect of the state variable in the drift component, H_0 as a constant σ, and H_1 equal to 0 such that there is no effect of the state variable in the volatility component. When X_t is a one dimensional state variable, I obtain the Black-scholes model in standard form.

Estimation

The quality of a scenario set is highly dependent on the accuracy of the model parameters. A model which estimates model parameters inaccurately will be inherently flawed. In case of a one dimensional model, the Maximum Likelihood Estimation (MLE) method can be used to derive an estimator with desirable statistical properties such as consistency and efficiency. In the case of certain multidimensional models however, the closed-from expression of the density functions is not always known. This makes using the MLE significantly more difficult and as a result alternative methods are preferred.

One such alternative method is the General Method of Moments (GMM). The GMM method can be used to derive an estimator which is consistent and is the most efficient estimator in the class of estimators based on moment conditions. In order to derive the GMM estimator, a practitioner derives the characteristic function, from which moment conditions can be easily obtained. While the density function may not be known in closed-form, the characteristic function can be found in a straight forward way. In the remainder of this article, I show how to derive the expression for the characteristic function and use the characteristic function to derive the moment conditions for GMM.

Under the general model in this article and the imposed affine functions, [1] have shown that the form of the characteristic function is given by

$$\psi(u; x_t) = e^{C(u,t)+D(u,t)X_t}, \tag{3}$$

where the values for and are found by solving the complex valued Ordinary Differential Equations (ODE) below

$$\frac{\partial D(u,t)}{\partial t} = -K_1'D(u,t) - \frac{1}{2}D(u,t)'H_1 D(u,t),$$
$$\frac{\partial C(u,t)}{\partial t} = -K_0'D(u,t) - \frac{1}{2}D(u,t)'H_0 D(u,t) \tag{4}$$

with boundary solutions $D(u,T) = u$ and $C(u,T) = 0$. Note that in the expression, $C(u,T)$ is a scalar and in case of multivariate models $D(u,T)$ is a vector with dimensions equal to the number of variables. By solving this ODE, I obtain the closed-form expression for the characteristic function of a multivariate SDE in a straightforward way. Furthermore, it can be shown that from the characteristic function, the k-th moment can be derived using the relation below

$$E[X^k] = \frac{1}{i^k} \frac{\partial^k \psi(u; x_t)}{\partial u^k}\bigg|_{u=0}. \tag{5}$$

Namely, assume the characteristic function for a random variable X is formally denoted by

$$\psi(u; x) = E[e^{iux}]. \tag{6}$$

The expectation on the right hand side can be rewritten using the well known expansion for Euler's number as follows

$$\psi(u; x) = E[e^{iux}] = E\left[1 + iux + \frac{(iux)^2}{2!} + \ldots + \frac{(iux)^k}{k!}\right]. \tag{7}$$

If I take the derivative w.r.t. u of the expansion above, I find the expression denoted by

$$\frac{\partial \psi(u; x)}{\partial u} = E\left[ix + \frac{2u(ix)^2}{2!} + \ldots + \frac{ku^{k-1}(ix)^k}{k!}\right]. \tag{8}$$

By evaluating the derivative w.r.t. u of the expansions at the point $u = 0$, all that is left is the expression denoted below

$$\frac{\partial \psi(u; x)}{\partial u}\bigg|_{u=0} = iE[x], \tag{9}$$

or more formally by taking the k-th derivative w.r.t. u valued at the point $u = 0$, I obtain

$$\frac{\partial^k \psi(u; x)}{\partial u^k}\bigg|_{u=0} = i^k E[x^k]. \tag{10}$$

By slightly adjusting the expression above, I am able to easily obtain the k-th moment by differentiating the characteristic function and evaluating the derivative at the point $u = 0$. Namely, I obtain

$$E[X^k] = \frac{1}{i^k} \frac{\partial^k \psi(u;x)}{\partial u^k}\bigg|_{u=0}. \qquad (11)$$

Using the relation above, I directly obtain the k-th moment condition of any stochastic differential equation. By deriving at least as many moment conditions as there are model parameters, I use the GMM method by [2] to generate an estimator which is consistent, asymptotically normal and most efficient in the class of estimators based on moment conditions.

Conclusion
The method described in this article, can be used to derive moment conditions of any multivariate stochastic model. After obtaining the closed-form expressions of the moment conditions, I estimate the model parameters using the GMM method based on empirical financial data. Note that some external variables, such as the volatility, might be latent and would require a proxy in order to obtain the historical values. Once the model parameters are estimated using GMM, I use the forward Euler Method to generate forecasted valuations of various broadly-defined asset classes such as fixed income, equity and real estate. The horizon of the scenario set and the number of scenarios can be freely chosen as part of this method allowing for a flexible and convenient use of the scenario set. ●

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Joost Broeders
Master QFAS Graduate (2022)

An Event That Brings Students and Employees Together

written by **Floris Somers**

Hi there, I am Floris Somers and most of you probably know me as a board member from last year. You will probably still see me at most events this year since my love for Asset | Econometrics has only grown. Therefore, I participated in the Econometrics and Operations Research Business Dinner as well. Let me share my point of view at this formal event as a participant instead of a board member.

In contrast to most of our company events, this is a CV selection-based event. This means companies get to choose whom they want to have dinner with. This was a good moment for me to update my CV and see what kind of companies it would attract. To be sure my CV was ready to be judged, I let my CV be checked by Career Services first. Luckily Asset | Econometrics organizes private CV checks in cooperation with Career Services twice a year. I got a few useful tips. The career services officers told me to clearly explain which skills I learned at each job, to have at most two bullet points per subject (otherwise it gets way too long), and to add my programming skills in different languages.

Luckily, I got through the CV selection and was present at the Philharmonie on Tuesday, October 11. It was the first time the EOR Business Dinner was organized on such a big scale, seven companies and 42 students participated! A big shout-out to the hard-working committee and coordinator Ikie. The event started at 17.30 hours with presentations from all seven companies, which was very insightful. An event like this is the perfect opportunity to get to know a lot of companies in a short span of time.

The dinner itself was very luxurious. My first course was with Nationale Nederlanden and I ate sea bass with artichoke, truffle, and pecorino. Luckily, also some bread with dips was brought to the table, as most Dutch people like me have growling stomachs around 18.30 hours. I sat at the table with Quinty van Spaendonk and she told us about a project involving risk management for the war in Ukraine, which was very interesting and something I did not know NN would be part of.

My second course was with Ortec and I sat next to Dirk Boelen. He started working at Ortec a few years ago and told me about an interesting consulting project they did for Heineken. We discussed what would be the biggest difference between working at Heineken as an Econometrician yourself and working for Heineken as a consultant from Ortec. The food that was served during the second course, salmon with potatoes, herb crust, and fennel, was delicious as well.

My last course was with Zanders, where I sat close to Jelle Thijsen. We discussed how he ended up at Zanders, he works as a consultant at Zanders for just over a year, but also worked there as a student. He worked at a few jobs in between as he wanted to orientate a bit further, which I think is a smart thing to do, but realized he liked the atmosphere at Zanders the most. The last meal I enjoyed was white chocolate crème with orange, cinnamon, and mulled wine.

To close off, I want to thank the committee again for organizing this wonderful event and hope everyone present enjoyed the food and conversations as much as I did! ●

Let's Talk!

Let's talk about career choices. During the latest Freshmen Night our newcomers were divided into teams with the theme 'What would you be without a degree?'. For example Athletes and Supermarket Employees. But this does beg the question: if every career would pay the same, what would you do or study instead of econometrics? I went around and asked a couple of students this exact question. Answer this question for yourself, would you still study the same degree, would you study at all, or would you go for something completely different? Maybe you could use some inspiration. There does not seem to be a dominant choice from our fellow students, though, most stay loyal to our study.

written by **Huub Hoven**

I will break the ice. I would probably still study the same thing. I have a great interest in efficiency, and how to improve it, and Econometrics is a great place to do this. But if I had to pick something else I would probably work in construction or as a cleaner. If those are out of the question, some kind of public service would also be okay for me too.
Huub Hoven - 20 years old

I like econometrics so I would continue to do something within econometrics, in addition I would continue to do my current side job in horeca so I am not sitting at my desk full time. Also organizing events or being a travel guide excites me.
Siebe Verbeek - 20 years old

My answer would be that I would still study Econometrics because I do really love it, and am not doing it for the money. Then, in any case, I would work for a company in climate change. But I could also become a part-time writer or something along those lines.
Laurentien Diepenhorst - 20 years old

I would probably have an animal shelter where I take care of the animals with a research agency. Alongside that I would have a small coffee corner, where people can relax and enjoy a hot cup of coffee.
Juliëtte Tillie - 24 years old

If salary would not matter, I would like to be more involved with international issues. International law would be my study.
Job Hoven - 23 years old

I would love to work as a voice actor and/or singer! But I find it hard to say whether I would not study Econometrics anymore, since I do love the study.
Tianle Xie - 22 years old

I think if every single job had the same pay, I would be a film reviewer. It appears like a good job to me, just watching movies and evaluating whether they are good or not.
Matthijs Kroesen - 20 years old

Your future in Tax

Give your career a boost and opt for a working student position at PwC! Within our Tax field, you support private individuals, medium-sized companies, listed companies, governments and other organizations in optimizing their tax position or advising and implementing compliance. You inform customers as well as possible about all relevant and current (tax) developments and the consequences for their specific situation. A great opportunity to orientate yourself and gain experience!

For current events, internships and vacancies, visit *pwc.nl/careers*

pwc.nl/careers

Quatsch!

Quatsch?
Over the past few months, the editorial staff of Nekst received many quotes that relate to the study of Econometrics and to the activities organized by Asset | Econometrics. Hereby, we present to you a selection of some striking and funny quotes! Please send in your quotes at:
www.Asset-Econometrics.nl/more/nekst/Quatsch

¯_(ツ)_/¯

Isabel
"Ik was laatst ziek en toen heb ik 25 uur op tiktok gezeten"

Selina
"Echt? Op een dag?"

Jelte
"ik moet echt leren een das vouwen"

Sara
"Deze moet sowieso in de Nekst"

Floris
"Kijk we doen de Angela Merkel"

Laurentien
"Hoezo is dat een quatsch?"

Selina
"Zij is toch dood"

Laurentien stuurt de Quatsch van Joris: "Mega mindy is de Nederlandse roze Robin Hood"

Huub (komt uit België):
"Nederlands?!"

Meike
"Ik ga zaterdag naar de intocht van Sinterklaas"

Floris
"Is het al 5 december?!"

Daan (tijdens indeling van groepjes)
"Tillie… ik heb geen idee wat haar achternaam is"

Wout
"Voor mij geldt bij tanden poetsen: less is more"

Puzzle Time

Oh no! The Treasurer of Asset | Econometrics, Matthijs Kroesen, has been kidnapped and we need your help. The unknown kidnappers are holding him for ransom. We have intercepted a message that seems to be encoded. We need your help! Please help us decode the message to find out who kidnapped him and where he is held captive.

written by **Huub Hoven**

We already know that they are located near an airport, because our correspondent heard an airplane taking off during the phone call with the kidnappers. To help you we have given you the last letter he wrote before his disappearance.

Dear Asset,

I am running a bit late and cannot make it to the meeting.

Best regards,

The Treasurer

Encoded message:

Catp tqrdoeq

O ntva ujskprujtrafy haaj docjtllac. O ntva ajekcac rnoq gaqqtia rk gtda qupa or qtsafy ftjcq ojrk ykup ntjcq. O ck jkr djkw wnapa o tg hur o wkda ul oj qkga qkpr ks qrkptia steofory. Or oq ojepacohfy ekfc tjc rnapa oq vapy forrfa ctyfoinr. Kurqoca ks rna wojckw rnapa oq t hoi qoij kj rkl ks tjkrnap huofcoji rntr qlaffq AJTQ. Rnapa ckaq jkr qaag rk ha guen qaeupory, qk hpatdoji ga kur woff ha atqy, tq fkji tq yku sojc ga.

Haqr paitpcq,

Decryption key:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
												Q											X	Y	Z

Encryption key:

A	B	C		D	E	F	G	H	I		J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

KIDNAPPED ME

Can you figure out the puzzle?
Please enter your solutions at www.Nekst-Online.nl/Puzzle. A goodiebag will be waiting for whoever has sent the best (partial) solutions. Please note that, as before, every recipient of this magazine is eligible to send in their solutions, so members of the department are invited to participate as well. Good luck!

The solution of the previous puzzle can be found at www.Nekst-Online.nl.

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Agenda

TUE
13
DEC
Study Break
This exam period you will be welcome to join us again for a break between all the studying!

WED
21
DEC
Christmas Dinner & Announcement
Dress up, warm up, and drinks up… our Christmas Dinner is back! After having a delicious meal we will have the announcement of our new boardies, so be sure to be there!

WED
25
JAN
Monthly Afternoon
The first monthly afternoon of January will be on Wednesday January 25. Keep an eye on our socials to find out the exact plan.

MON
30
JAN
CV Training ECT
During this training you will learn all about how to improve your CV. Especially handy when you are thinking about signing up for formal events like the Econometrics Consultancy Tour.

TUE
31
JAN
DMM & Constitution Drink
During the Department Members Meeting, the new board will officially be constituted. After the meeting, which is free to join by all our members, we will thank Ikie and Nienke for their efforts during the Constitution Drink!

MON
06
FEB
LED 2023
The National Econometricians Day is back! The biggest networking event for our field of work will be hosted in Den Bosch. Their website, leditbeyourday.nl, will give you all the information you need. Check it out!

THU
09
FEB
Male/Female Activity
Boys and girls will once again be separated to do different activities, only to be reunited again later on during the drink. More information about the program will follow!

WED
15
FEB
Active Members Meeting
Sit down with the board of Asset | Econometrics and give your opinion on certain topics. During this meeting you will get the opportunity to help us improve the association!

MON
27
FEB
LaTeX Training
Improve your skills in LaTeX during this training! The program is used widely for thesis essays and other formal documents, so definitely check it out.

WED
01
MAR
FRI
03
MAR
Econometrics Consultancy Tour
During this two-day, two-night tour we visit several companies that work in the field of consultancy. Every company will talk about their field of work and will provide an interesting case. The participants will be chosen by the companies according to their CVs.

Register and find more information about our events at
www.Asset-Econometrics.nl/events

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