



Per vectum

FEATURING

- Supervisors' Tips for a Flawless Thesis
 - Exchange Stories- Barcelona & Singapore
 - Vectum Book Club
-

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Word of the



President

Dear econometrician,

Winter has come and gone, and as the days get longer and nights shorter, it is truly starting to feel like spring. Spring, the season of new life; one story ends as a new one begins, the old generation makes way for the new, and soon our board too will pass the torch to the next. But before all that it is time for reflection.

It has been another eventful period. Starting off with a bang, we had the National Econometricians' Day (LED) on the first

Monday of February, where third-year bachelor and master students had the opportunity to find the future employer of their dreams. Despite a last-minute location change (relatively speaking) from Utrecht to 's-Hertogenbosch, the LED committee managed to create an amazing day for all third years and masters lucky enough to acquire a ticket. Vectum also had a strong showing, with over 50 students from Maastricht University attending the event. To give our LED-attendees a well-deserved break – and definitely not because we got the tickets at the wrong time – we broke from tradition with a Friday activity, instead of on the regular Tuesday evening. During the first proper Vectum activity of the semester, members got to defy gravity at Jumpsquare. The next Tuesday of the period fell on Valentine's Day, and as such it was the perfect day for a Valentine's-themed activity. The activities committee gave it their all to make this activity a success: they prepared cupcakes for the couples to decorate, ingredients for home-made ice cream, and a quiz to find out how much the pairs truly knew about each other. After the Carnival break our members got to test the inner workings of their minds on some cryptographic puzzles during the enigma night. Teams had to work together to crack the six codes as fast as possible. Some of our third-year bachelor and master students also travelled to Amsterdam later that week for the Econometrics Consultancy Tour we organise yearly in cooperation with Asset|Econometrics. The next week we had our quarterly research lecture, this time given by PhD student Son Tran on his research topic anticipatory order picking. On the same day we kicked off the recruitment process of our successors with the board info session. In week 5 our members got to show off their moves during the Salsa workshop by MSDV Let's Dance and in week 6 we wrapped up the period together with Pippel in the bowling alley. Many thanks to the activities committee for all the work they put into this period's activities.

As is tradition, we will also celebrate the end of winter with our yearly ski trip in the resit week, from which we will already have returned when you read this. Although the number of signups is fairly low, we will give it our all to make this a trip to remember. And remember it we should, as to all good things comes an end and Vectum's ski trip is no different. It is with a heavy heart that I must report that this will almost certainly be Vectum's last ski trip for the foreseeable future. Due to a combination of price increases and lack of interest, we do not think it is feasible and in the interest of our members to continue organising this trip. However, we, and I'm sure the next board as well, will do our best to come up with an alternative that more members will be able to enjoy.

On the topic of discontinued events, the LOES, the national organisation of econometrics study associations, has decided that they see no future in the LEST in its current form, as some associations have expressed concerns that the event is not appealing to enough of their members. The new "LEST" will therefore no longer be a sports tournament, but most likely a beach day of sorts held in spring or early summer instead of autumn. Vectum will still be the association responsible for organising this new event and we are currently preparing for setting up the committee. We will most likely open applications for this committee next month, but in case you already know you want to take on the honourable role of being one of the organisers of the very first LESD (working title), feel free to reach out to me.

Both the new trip and the beach day are things to look forward to for next year, but there are also plenty of interesting and exciting activities planned in period 5. For starters, our IAC Asem and the activities committee once again have some amazing activities lined up, as well as two company-sponsored activities arranged by our EAC Filip. Furthermore, we have three in-house days scheduled with Da Vinci, Northpool, and Flow Traders and are working on getting one or two case days planned as well. Of course, this outlook on period 5 would not be complete without mentioning the members' weekend, which will take place in the weekend of 23 to 25 June. The location is still a secret, although I've heard rumours that it might be in Egypt again this year. The members' weekend is the time to let loose after a full year of studying and finish the year in style.

For us as the board the week after the members' weekend is one of the most important times of the year. It is the week leading up to the annual GMA, where we get to present to Vectum's members the state of our association, but more importantly, it is also when the next board will take over. While we may or may not have already made a decision on who will be at the head of our association next year, I cannot disclose any details yet. Be sure to attend all our Tuesday events and keep an eye on our socials if you can't wait to find out.

We have a very exciting period coming up and I truly look forward to all the events we have planned. However, I cannot help but feel a little sad that this is already the last period of our board adventure.

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The time spent with my fellow board members was truly an unforgettable experience and I hope our proposed successors will spend their year with the same excitement as we did. I wish all our members the best of luck for this last period of the year and I hope to see you all at our Tuesday events.

Best regards,

Hugo van Oosterhout

28th President of Vectum

A handwritten signature in black ink, appearing to read 'Hugo', enclosed within a large, stylized, circular flourish.

Karaoke Night



By Ngoc Phung

After the first semester, Vectum decided to host a fun Karaoke night for our beloved Active Members, who had worked hard to prepare for our weekly activities and helped Vectum sail smoothly through the semester. It is very evident how excited everyone was by the heated discussion in the group chat about song requests. The vocal cords were specifically saved for this one special night of singing(/yelling into the mic).

The night kick-started with a few familiar melodies from the 2010s. The singers were a bit shy at first so everyone joined in together for all the karaoke essentials that most people had already known the lyrics by heart. When the alcohol started to kick in, we started to see more bold choices in songs such as crazy Adele, Ariana Grande high notes and even some Eminem fast raps. It would not be Karaoke night without some of our iconic songs such as “Start of Something New” (High school Musical), “Party in the U.S.A” (Miley Cyrus), etc. At one point, we were listening to people singing in different languages other than English: Dutch, German, Russian, and even Korean songs were played for our singers to display their “angelic” vocals and rapping skills. Funnily, not only the singing abilities of our Active Members and Board were put to the test, their dancing skills were also challenged with some of our upbeat songs.

The night ended with us hugging as a circle and singing our favorite “Piano Man”. It was definitely a fun and throat-straining night for our dedicated performers!



L.E.D

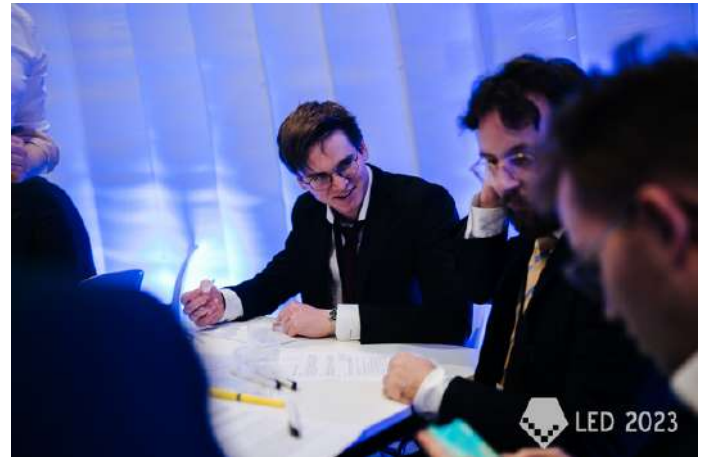


By Marie Corillon

After two long years of online LED, it was finally time to attend the business event that I've heard the most about since joining E&OR in person.

The LED (Landelijke Econometristendag) or National Econometricians Day is an annual recruitment event for 3rd-year and master students in Econometrics & Operations Research. This year's edition was organised by Asset | Econometrics, the E&OR study association at Tilburg University. They successfully gathered over 70 companies and 750 students in Den Bosch. The event was fantastic, so a big thank you to them!

For Vectum, the day started not so bright but definitely early at 7 a.m. at the train station to be able to register on time in Den Bosch. We received the first goody bags of the day upon arrival and met with all our members. We attended the opening plenary session with Björn Kuipers, a former UEFA and FIFA referee, and owner of some Jumbo supermarkets in Oldenzaal, an intriguing combination for a funny character.



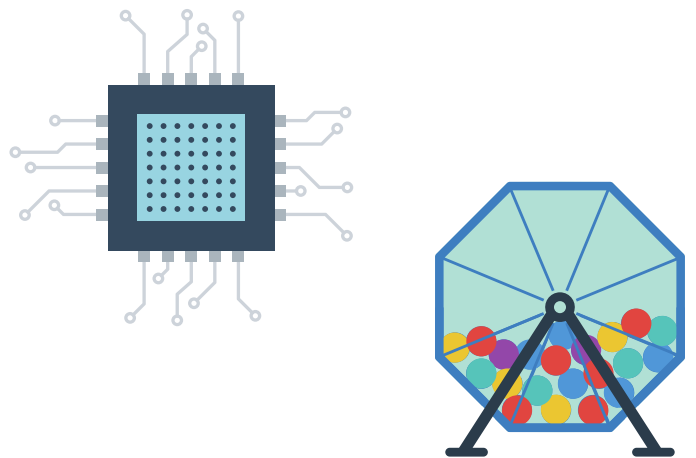
After the talk, it was time for the second activity of the day. While some were solving business cases directly brought by companies, some others went to the company fair or had speed-dates with recruiters. My case was with Friesland Campina, the emblematic Dutch dairy cooperative. They had designed a game representing the chain of operations from farmers to supermarkets in which we had to efficiently meet the supermarkets' demands while limiting waste and decreasing our CO₂ impact.





After all the hard work, we took a well-deserved break to enjoy a variety of lunch options. Some were discussing with companies while some others were happy to find their friends and debrief about their cases.

Once lunch was over and a litre of coffee consumed, it was time to go back to business. You either had a first or second case to attend or could go to the company fair to grab the last few goodies and chat during the speed dates.



After such an exhausting day, it was due time to recharge over some food during the recruitment dinner. I had the first course with the National Postcode Lottery, then had the chance to ask questions to the most coveted company of the day: ASML, specialists in systems that are used in the production of integrated circuits and microchips. Funny enough, the employee I was dining with did her bachelor's in E&OR in Maastricht! #UMrepresent



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After being woken up at 7 by construction work in the hostel, we took the train back around 9:30 and were K.O. for the next several hours (or days in my case :')).



The day was now coming to an end, but for some, the night was just beginning. Some members went back to our beloved Maastricht, while others went further away to Utrecht, where our hostels were located, and more importantly, where the afterparty was hosted! The DJ played a debatable mix of songs containing both early 2000s hits and carnival songs.

I'm thrilled to have finally experienced the LED and now understand what all the hype was about! If you haven't gone yet, don't miss the opportunity to make amazing memories there!



JUMPSQUARE: Trampoline Park



By Polina Barinova

On Friday evening, econometricians gathered for a thrilling and unforgettable event at Jumpsquare. Jumpsquare is an indoor trampoline park known for its exciting features and attractions. We came there full of enthusiasm, ready to have fun and enjoy the activities.

The atmosphere was electric with excitement as everyone entered the venue. All of us were dressed in comfortable athletic wear, ready to jump. The event was packed with thrilling activities. Some econometricians performed incredible stunts on the trampolines, others played dodgeball (a classic game that never fails to excite). We even had a battle over a pool full of soft cubes, balance and cunning are the key to winning. The event was so fabulously fun that we didn't notice how quickly the time flew by.

The evening ended with a traditional drinks session at the Preuv. The econometricians, still buzzing from the adrenaline rush of the event, shared their experiences and talked about their favorite moments. This event was an excellent way to escape from academic life's rigors and have fun with Vectum.



Valentine's Day Special

By Marie Corillon

This year, February 14th, a.k.a the international lovey-dovey-do day, fell on a Tuesday, which means that the activities committee had no choice but organise a special “Valentine’s Day” activity.



After the introductions were done, we also made ice cream from scratch. It turns out that all you need is cream, a ton of sugar, salt and ice. Amber and Martin led the way, being the first to transform this surprising mixture into a delicious sweet treat.

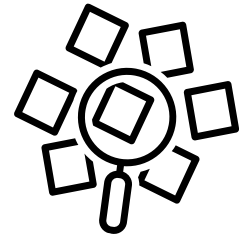
Finally, the real fight began. Who will be the best couple of the evening? Asem asked us different questions about our date: what’s their shoe size, what’s their favourite song, their favourite meal, what’s their biggest fear, or who would they switch life with for a day? After this first round, only two couples remained: Vectum’s official power couple, Ties and Paulina, and the new dream team composed of Shashwat and myself. After six tie-breaking questions, Ties and Paulina established that no one could beat their friendship and won the game!

To celebrate our love for Vectum, we took the opportunity to get to know each other better. Gathered at Que Pasa, we were all dressed in red, paired up and tasked with learning as much as we could about our partner. While doing so, we decorated cupcakes for our other half. For example, my date (hi Shaswhat) made me a cat-themed cupcake after learning about my love for cats (best date ever). He told me about his interest in politics, I told him about my long-lasting obsession with Gilmore Girls, and we had our very first argument over the fact that my favourite colour is sparkles (how romantic).



Congratulations to the happy couple, and long live the **Vectum love!**

Enigma Night



By Polina Barinova

On February 28, econometricians gathered on the top floor of Que Pasa to participate in the “Enigma Night” event. We were divided into 5 teams to test our analytical and problem-solving skills and, of course, to have a lot of fun. This event was exciting, but let’s start with a little historical insertion.

Enigma was a type of encryption machine used by Germany during World War II to send secret messages. The machine was invented by a German engineer named Arthur Scherbius in the early 1920s, and it was used extensively by the German military to encode their communications during the war. The machine was designed to be highly secure and difficult to crack, and it was believed to be unbreakable by the Allies for much of the war.



However, a team of codebreakers at Bletchley Park, led by mathematician Alan Turing, was eventually able to crack the Enigma code. They developed a machine called the Bombe that was able to rapidly break the encryption. The cracking of the Enigma code was a major turning point in the war, as it allowed the Allies to intercept and decipher German messages, giving them valuable intelligence on German military operations. The work of the codebreakers at Bletchley Park is credited with shortening the war by as much as two years and saving countless lives.



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If you're interested in learning more about the Enigma machine and the codebreakers who worked to crack it during World War II, I would recommend the movie "The Imitation Game" (2014).

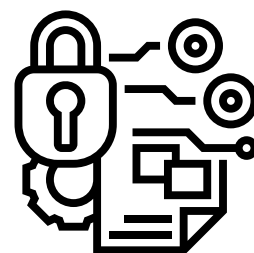


So back to that amazing evening, the event was designed to challenge the participants' ability to decipher riddles and solve puzzles. Each group had to solve six tasks, each of which had a riddle that needed to be decoded. The solution to each riddle was a color.

The task was to decipher all six riddles within the given time frame of two hours. We were also able to use a hint from the game leader for each task. However, if we used the clue, we only received one point for completing the task, not two. This added an element of risk to the competition, as the groups had to decide whether to use the clue and possibly sacrifice a point. The competition was really intense, the riddles were difficult but not impossible to solve, and each group worked hard to solve the code.



The evening ended with congratulations to the winning team and general merriment. All in all, it was a great success, and we look forward to the next Enigma Night.



Econometric Consultancy Tour

By Steef Gottenbos

Between March 1st and 3rd, to get to know how Econometrics and Operations Research can be applied in the real world, the Econometrics Consultancy Tour was organised to peer into the lives of consultants. Along with the E&OR association of Tilburg University, Asset Econometrics, third-year and master's students travelled to Amsterdam to get a peek at 4 consultancy companies. These companies were Deloitte, EY, MCompany, and Gupta Strategists, all with completely different takes on not only their way of operating but also their ways of introducing us to the world of consultancy. Consultancy is all about giving advice. But what advice to give, and how you go about giving that advice is definitely much more complicated than it might seem at first.



To get acquainted with Asset Econometrics, outside of the more formal business visits we would have, we had informal drinks and snacks at a local restaurant. As true econometricians, we could not relax even for a second though, as we chose to play a mind-crunching game where we would keep counting up, but we would keep adding new rules about how we were allowed to count up, such as skipping numbers or saying them twice. It was a really fun time together and we were able to do some socialising before we would do all the challenging consultancy cases.



On March 1st, we travelled to Amsterdam with the group and got settled into the hotel we were staying at, close to the companies we were going to visit.

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The next day, we got up bright and early to visit our first company Deloitte. We travelled to their office, and we were greeted by a group of consultants. We were informed about the company and then it was time to start our first case. In groups of 4-5, we were given several smaller cases to work on, and each time we would get graded on how we tackled the cases. With positive feedback from the consultants, we were given more information about where the best location for an ocean clean-up device may be. An example of one of the smaller cases that we had to solve was a crossword puzzle, with all kinds of questions about business and consulting. With all the hints after the small cases, we defended our chosen location for the clean-up device to the consultants at Deloitte, and a winner was chosen at the end. After the exciting case, we got a nice lunch and a chance to talk to the consultants and ask questions about working at Deloitte. We also got to see some of their office, with a beautifully designed interior with many flex spaces to work. In general, the case was really well put together and it gave insights into how consulting in a practical sense, with all kinds of different angles being tackled and testing our presentation skills.



After saying goodbye to the Deloitte team, we headed for another Big Four company EY. They were also located on the Zuidas so it was a short walk away. We were whisked up to the top of their office building and were given a short presentation about their company. We were then split up into groups and the consultants gave us a tour of their office, from the amazing view of the Zuidas at the top to the varied flexible office spaces, to the gym, we saw it all. Then it was time for our second case, a murder mystery! In the spirit of the popular game Cluedo, we were tasked to figure out who committed the murder, where, and with which murder weapon. To do this, we were given data sets such as Tweets sent out by the people involved, and their financial records. By finding oddities and discrepancies, all the teams were able to present their findings and convince the EY consultants that their conclusions were the truth. For example, we found that one of the suspects had transferred a large sum of money right around the time of the murder, meaning that there were accomplices! All in all, the case was a test of not only data analysis but also teamwork and coordination as there was far too much data to go through by yourself. After the case, we had dinner at a local Italian restaurant so we could become acquainted with the daily lives of the EY consultants. It was an exciting day, so Vectum decided to head back to the hotel after the dinner.





The next morning, we had some breakfast and then it was time for our third company, MICompany. Their office was located in the Amsterdam city centre, and it was nice getting to see the beautiful centre over the canals. The company greeted us and sent us to the top floor where we were told about the company and were able to ask so many questions we ran out of time! We got a nice tour of their office, which was well designed and with a completely open design philosophy, which led to a pleasant and productive atmosphere in the office. It was then time for our third case. This one was completely focused on cars! Our task was to create a website to compare different car models, and it was divided up into smaller tasks, like creating a design layout and analysing a data set to test different hypotheses about cars. After each task, we handed in or presented our findings and the group that got the highest grade over all the tasks was crowned the winner. It was an interesting case with many different approaches that you have to consider as a consultant, even for just a single problem.

We then had lunch with MICompany where we got to ask the questions we did not get to in the beginning and to get to know what working at the company was like from a direct perspective.



After lunch, it was time to go to our last company of the trip, Gupta Strategists. Gupta focuses specifically on consulting in the health sector, so it was interesting to see consulting from this perspective.



After arriving at a grandiose mansion-esque building, we were greeted by the consultants from Gupta and were given a short presentation about their company. After this, it was time for our last case. Here, we were given information about a Polish health insurance company, with information like their relationship with some Polish hospitals, as well as historical data about who is insured at the company. We were even given the opportunity to chat with an expert in the field of our choice!



With this information, we were tasked to advise the company on how to make it profitable again and all the groups presented their findings to the Gupta consultants. All the groups on the trip were even able to draw conclusions that Gupta had not yet considered! It was a thought-provoking case, since many decisions that you may recommend to turn a profit may negatively affect the health outcomes of those insured at the Polish company, and the real-life aspects is what I found particularly interesting about this case. After the case, we had some drinks with Gupta to, more informally, get to know the operations of the company and the daily lives of a consultant.

We were then treated to an office tour and a delicious dinner on location, and we were able to ask many questions about consulting before the trip was over. We travelled back to Maastricht that evening, exhausted from a really engaging 3-day trip.



In general, I would recommend the Econometrics Consultancy Tour to any third years and master's students looking for more real-life applications of Econometrics and Operations Research, especially if you are still not sure what direction you want to go after your studies! You will see many different companies, all with their own take on things and it is also a great experience to peek into the office lives of companies! I had a great time and Asset Econometrics was also really nice to travel with.



Research Lecture & Board Info Session

By Ngoc Phung

In period 4, we welcomed Son Tran, a PhD candidate at the KE (Quantitative Economics) department in Operations Research and the tutor for the course Quantitative Introduction to Business for some of us, to give us a Research Lecture on his current research topic: Anticipatory Order Picking.

First, Son introduced us to the concept of Order Picking Problem. Order picking is the process of retrieving a given set of items from storage locations in response to customer orders. He then explained that in order to better understand this problem, we need to look into picker routing (finding the route to pick a specific number of orders that minimizes travel distance of the picker) and order batching (constructing order batches that minimizes travel distance of the picker). However, solving the order batching problem exactly is not possible for large instance sizes, given the amount of daily orders warehouses must manage. Therefore, Son proposed how Anticipatory Order Picking (AOP) may come into the task of improving order picking activities in warehouses.



The idea behind AOP is that it is a combination of order batching, picker routing and specifically forecast information. There are two ways to approach AOP, one is to pick forecast orders separately and the other is to pick the forecast orders simultaneously with existing orders. Both approaches have their own advantages and disadvantages regarding working time, depot space and computational cost.

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Then, Son also explained to us the formulation of an integer programming of the restricted AOP, and how forecast error types affect AOP. When forecasting, we can make errors such as overestimating and underestimating, so Son clarified about when these errors can happen in the forecasting process and their consequences on AOP.



Besides integer programming, Son also mentioned to us how to use heuristics to solve AOP and the formulation of such a model. To test this method with simulation, Son spoke about the simulation settings and the corresponding key findings, such as how he found that over-forecasting is significant worse than under-forecasting, AOP showed an improvement of idle time with under-forecasting 20% number of items, and the travel time of the picker is reduced at the expense of an increase in extraction time and setup time.



Lastly, Son concluded the lecture by sharing with us the topics of some of his ongoing work such as local search heuristics and applying cross-learning forecast methods. After the research lecture, we joined the Board Information Session where we chatted with the current Board about their positions and future prospects (and admired amazing Photoshop skills on the slides). In the end, we went to Preuverij to end our typical Tuesday night.

We would like to thank Son Tran for sharing his interesting research topics with us in this Research Lecture!

Salsa Workshop



By Aashia Chanana

Vectum collaborated with MSDV Let's Dance, the dance association at UM, to bring its members an amazing way to shake all the stress away. The Salsa Workshop took place at the Body and Mind Studio at UM Sports, and all our members were well prepared to "step up" their game by learning how to dance. This was one event I was personally looking forward to the most; it's safe to say it was my favourite Tuesday activity this year.



As the workshop went on, we all started to get comfortable with the moves and our partners, but just as we'd thought we were getting the hang of it, we were either thrown a new dance move at us or we were told to switch partners.

All in all, the salsa workshop was definitely a memorable experience. I may not have become the next great salsa dancer, but I did have an amazing time dancing with my friends. And who knows? Maybe one day I'll find myself out on the dance floor executing complicated footwork or spinning around like a pro. The dancing continued with drinks at the Preuv :)

To get our hips moving, we began with some stretching and merengue. We were encouraged to loosen up and get our bodies moving to the beat of the music. After the warm-up, the instructor taught us some basic moves. As we paired up, we were told to choose who was going to be the leader and who was going to be the follower. The male ego rose, and all men were jumping to be the leader. To spice up the fun, we switched partners every 15-20 minutes, and it was a task not to get stepped on by the boys.



We would like to thank the dancers from MSDV Let's Dance for this memorable experience!

Bowling with

**DATA SCIENCE
WITH PURPOSE**

By Chiara Venditti

As the last event of the period, Vectum had the pleasure of enjoying an evening of bowling courtesy of Pippelle, a fast-growing data science agency. It was a fantastic event that gave us the chance to meet Sanne, Joyce, Rick and Roos, and to learn more about their experiences and the exciting world of data science.

The night started off with a few practice rounds as we all got used to the lanes. The competition was friendly but fierce, with everyone trying their best to outdo the other players. The atmosphere was electric, with laughter and cheers filling the air.



After a few games, it was time to award the top scorers. Four lucky winners were chosen, each receiving a prize from Pippelle. The best player of the night was Tobias, who was gifted a brand new bowling ball and a “Women in Data Science” tote bag! The highlight of the night was getting to know the team from Pippelle. They were all incredibly friendly and it was thrilling to have the opportunity to chat with them about their work and careers. It was inspiring to see how they are using data science to solve real-world problems and it gave us a glimpse into what we could do in the future.

When the time for bowling was up, we all headed over to Preuverij for some more drinks and chatting.

On behalf of Vectum, I want to say a huge thank you to Pippelle for sponsoring this amazing event and making us excited about what the future holds!



Exchange Stories



Marlena Schulz
Barcelona, Spain



Even before starting my studies, I already thought about the question “where will I go on exchange”? Norway, Hungary, or outside of Europe? Maybe Argentina or the USA? In the end I chose the beautiful city of Barcelona. So, let me tell you about my experience in the second largest city in Spain.

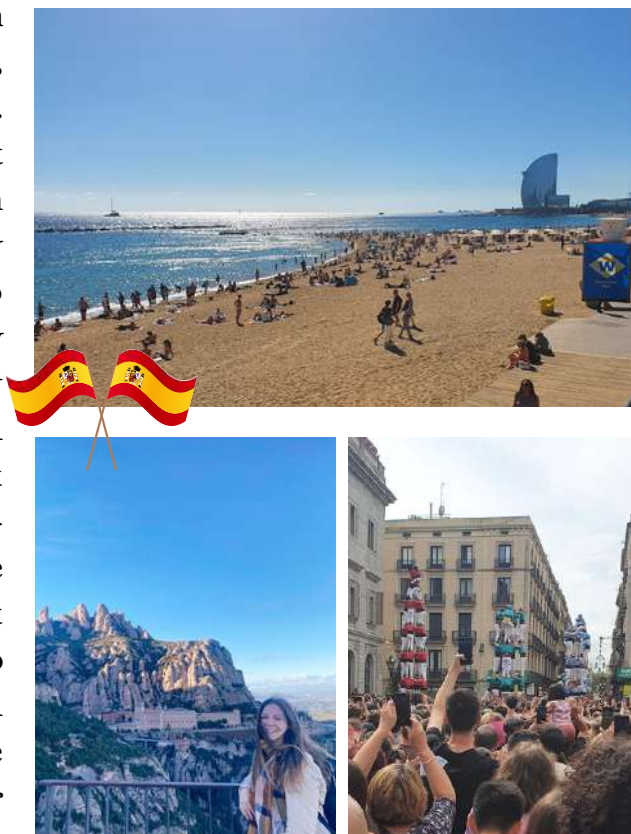
The moment I realized that I am on exchange was when I was sitting in the airplane, about to land and on my right side I saw the beautiful skyline of Barcelona. I was so excited and could not stop looking outside during the ride to my place. But honestly, that excitement stopped when I arrived at my apartment. Even though it was beautiful and located right in the city center, I was shocked when I found out there was no elevator. You might ask what the issue is? The issue was that I had THREE bags (please don't judge) and my apartment was on the SIXTH floor. What can I say, carrying all those bags while it being 35°C was NOT fun. Even though I was fully drenched when I arrived upstairs, and maybe also a little bit annoyed, the view from my rooftop terrace made it all worth it. In the end, I must admit, I almost had a love-hate-relationship with the stairs. I loved them when my friends came over and I heard their panting, and I hated them when I had to carry groceries or was tipsy.

The first days were filled with getting to know the city, going to Erasmus parties to meet new people and going to the beach. The beach became my new favorite place. The water was so nice, and time flew by while reading my books. At least when I was actually able to read because usually someone or something would interrupt my peaceful time. Most of the time it was a man screaming on top of his lungs “Aqua, Cerveza, Water, Beer” and “Mojitoooo, nice and fresh” or I was asked “Do you want a massage?”. At that moment I realized no matter where you are in Barcelona, someone will want to sell you something, this is a tourism city.



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As the weeks passed, I quickly became less of a tourist. I started knowing my way around the city, improving my Spanish and started having a routine. Each day I commuted to the campus of Universitat Autònoma de Barcelona, 30 minutes by train from the city center. That was the first time I really appreciated living in Maastricht and being able to bike to uni. In general, my courses were quite easy and I was able to spend most of my time with my friends. I met a lovely group of people and we started hanging out and watching Champions League almost every week. Time started flying by and mid-November I realized shit, I forgot to travel. So, the only reasonable choice was of course to start traveling almost every weekend. I first went to Valencia, then Granada, Sevilla and Cordoba and lastly to Madrid. In my opinion all those cities are worth a visit but let me tell you more about the star of my article, Barcelona.



There are so many things I started to love about living in Barcelona. Let it be walking along the harbor to my friend's place, drinking Sangria at the beach or anxiously waiting in front of my phone with my roommate, staring at the Too Good To Go-app hoping to get the magic box from our favorite cookie place. I loved being able to go to the beach after university and that the weather was amazing during the whole exchange. But mostly I love the people that I met and the time I was able to spend with them. We made vegan Paella, hiked at Montserrat, watched a Barca game, went to the best bar in the world and baked Christmas cookies without a scale. Obviously, there are also a lot of beautiful places in Barcelona like the Sagrada Familia, Parc de la Ciutadella and (my personal favorite) the Bunkers del Carmel. So, all I can tell you is; Barcelona is great and you need to visit! When my time came to leave Barcelona I was sad and happy at the same time. Sad, because I was leaving behind this life I built over the last months and the people I started calling my friends. Happy because I knew what I was returning back to my life in Maastricht with so many wonderful people I had dearly missed. With my friends (shoutout to my girls) we did an exchange dinner where everyone brought a dish or a drink from their exchange country. We talked about our experiences and that was when I realized, the question I asked myself at the beginning, where do I want to go on exchange had no right or wrong answer because it wasn't important where we went. The important things were the people we met and the memories we collected. So, to all first-year students. Don't stress about making the right decision on where to go. No matter where you get allocated you will have an amazing experience and maybe, who knows, after this article you will also consider Barcelona.



Emil Dotchev
Singapore, Singapore



Going on exchange in Southeast Asia has been the greatest experience of my life. Everything started with a long but comfortable flight to Singapore with the city amazing me with its modern design and architecture right from the start. What's unique about this design is the way it incorporates nature all-over which leads to many beautiful green spots around the city including the little airport jungle with an enormous indoor waterfall that greets every tourist coming in, the famous Marina Bay Gardens with their gigantic glowing and singing supertrees and even just regular office buildings, hotels and campus areas which all give a new meaning to the term "city jungle".

Singapore is also a very clean and orderly city with endless rules and fines for even the smallest of things. To give you an idea there is the infamous law prohibiting most imports and consumption of chewing gum as it is deemed too big of a littering risk! Moreover, you are not allowed to feed pigeons for similar reasons, you cannot eat or drink anything on public transport (even water and even when your daily commute in many cases takes an hour or more), smoking is limited to only certain outdoor areas and possession of drugs of any sort can be punished by death (with apparently 7 or so such punishment having been carried in the last couple years). You can probably see how such strict rules like these can make settling in seem difficult at first.

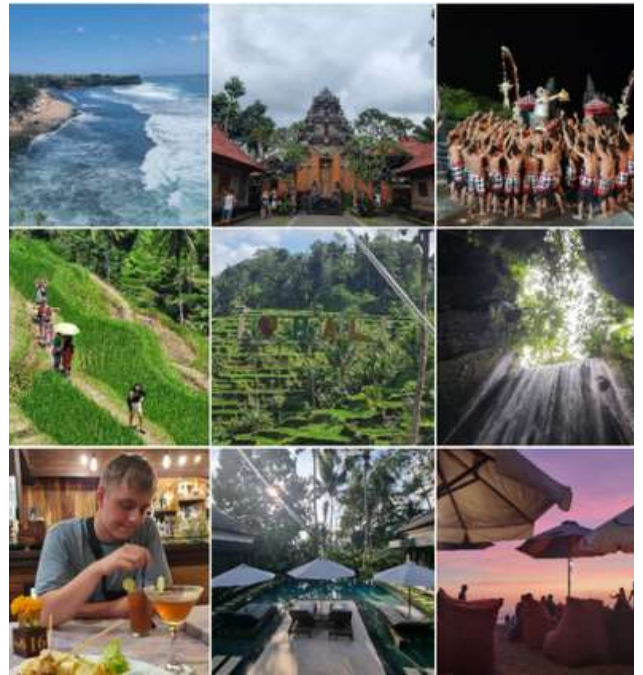


Luckily, I had an easy time as I was not alone in my adventures but instead spent the majority of my time with my crazy and annoying flatmate – Econometrics' very own Merle Praum. The two of us were inseparable as we also decided to opt for similar courses at the National University of Singapore where we also spent many hours studying in the 6 or so different libraries, sharing meals at the countless food courts that offered almost every food imaginable (though with a heavy preference for rice and noodle dishes), going for a swim at one of the three on-campus pools (with free access for students) and made some new friends from all over the world. The courses we both chose

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were challenging at times but were also quite interesting and gave us a new perspective on many things. It can be as simple as focusing in detail on the Asian financial crisis instead of the European debt one or it can also be some gained knowledge from a different discipline like data science, statistics or mathematics. Of course, we still found some time for partying and nightlife which although a bit expensive, was definitely worth it.

Beyond Singapore though we did three big trips to explore the Southeast Asia region. The first one was to Bali, Indonesia with an amazing group of friends, most of which actually exchangers from Maastricht including Econometrics' very own Obbe Pulles. We had lots of fun exploring the island (mostly on scooters), visiting waterfalls, temples, rice fields, beaches, nightclubs and many nice restaurants. We learned about the unique culture of the island which is predominantly Hindu in a predominantly Muslim nation and appreciated the hospitality and endless options for tourism activities. I went there with the expectation that the place is a bit overhyped but it is really amazing and I'd definitely want to visit again.



The next big trip was to the Philippines where me and Merle were also joined by Econometrics' very own Martin Bergmann (I know I'm name dropping a lot but it's great to travel with a fellow colleague abroad). We were very ambitious but managed to visit 4 of the main islands in less than 10 days. First stop was the capital Manila – a huge city with a nice historic centre but also a lot happening beyond it. Next was Padawan which had some breath-taking nature, Cebu which was in my opinion a more orderly version of Manila and Bohol which is home to the cutest creature I've ever seen – the tarsier. Overall, the Philippines has some amazing nature and interesting culture to offer (it is for example probably one of the most catholic nations I've seen).

Finally, the greatest trip of them all was our trip home. We were finished with exams around the beginning of December and then had the rest of the month free. Instead of staying in Singapore or going back home early though, we decided to of course travel some more. We had actually planned this from the beginning and had already bought our return flights to Europe from Hanoi, Vietnam instead of Singapore. So, we took all our luggage (about 40kg each) and went on to visit Malaysia, Thailand, Cambodia and Vietnam. First, we travelled by bus to Kuala Lumpur where we explored the city on our own and visited the famous Batu caves and Petronas towers.

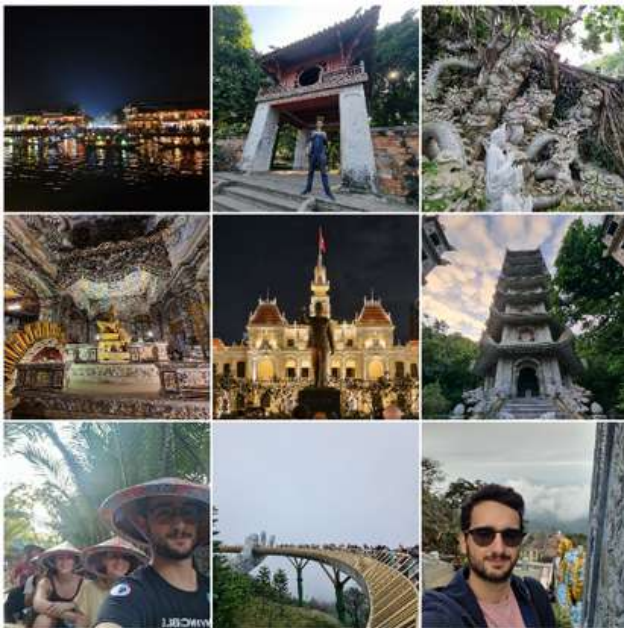


Next, we flew to Bangkok and explored the beauty of the royal palaces and temples, the nightlife and we did a short train trip to some famous markets – a railroad one and a floating one. Bangkok was a very interesting city with a rich culture and night Bangkok was a bit like Amsterdam on steroids in many ways. It is definitely one of the cities I want to return to the most.



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Next destination was Cambodia where the main attraction is of course Siem Reap with the biggest temple complex on the planet. We had a couple days to visit all the different temples and also opted to wake up early and watch the sunrise at the famous Angkor Wat. It is simply amazing and I would recommend everyone to visit the temples at least once. After Siem Reap we parted ways with Merle as she went on to volunteer in Indonesia and I continued my trip to Phnom Penh (Cambodia's capital) using a method of transportation that used to be unknown to me – the hotel bus. It is a good way to save time and money while travelling but it's basically a hostel on wheels. I did arrive safe in Phnom Penh though and explored the royal palace and national museum.



The last destination was Vietnam where I spent about a week travelling on my own before I met Merle again in Hanoi for our flight back. I went to Ho Chi Minh by bus first and explored the city mostly on my own enjoying some Banh Mi and other cool Vietnamese street food. I was amazed by how many motorcycles there are on the streets but it was also quite convenient to get around by motorbike taxi. I did a day trip to the Mekong Delta and afterwards flew to Da Nang which is more in the middle of the country. There I had 3 days to explore the city itself and the neighbouring Marble Mountains and Ba Na Hills, the city of Hoi An (famous for its ancient town and amazingly beautiful lanterns at night) and the city of Hue (one of the old imperial capitals). Finally, I went to Hanoi where I had a couple days to explore and visit some sights like the Temple of Literature before finally heading home. It was an experience of a lifetime.



Supervisors' Tips for a Flawless Thesis



By **Aashia Chanana**

As the thesis period starts for the third years' and master's students, we reached out to some of the thesis supervisors in our study program to share tips and advice on how you can achieve the most productivity while writing your bachelor's or master's thesis. Writing a thesis is a challenging yet memorable experience for all students. We hope this article gives you a better insight on the process of writing your thesis.

A big thank you to the five professors who contributed to this article: Tjark Vredeveld, Christopher Kops, Janos Flesch, Andre Berger and Stephan Smeekes!



1. Choose a thesis topic

As a first advice: **choose a topic that is close to your heart**, something that you would like to work on.

Every year, possible thesis topics are posted on canvas by the QE staff members and you can apply for these topics. However, if you are interested in working on a certain topic you can also contact one of the professors of the QE department directly. This topic could for example be something that is relevant to your side job or that you encountered during your stay abroad or being a member of some (sports) club.



You can then discuss with the QE staff member about this topic or the professor can redirect you to another person in the department, if it is not appropriate for her/him.

2 . Structure the thesis

After you have decided on what topic to write your thesis, as a first start, write down the **research question** that you want to answer and **give a proper problem description**. Having the right research question and problem description already gives a lot of structure. It helps in searching for literature that you need and it also helps in defining the approach that you want to take to tackle the problem as well as in where and how to find data.

If you already have data at the start of your thesis project, it is very tempting to dive into the data without knowing what you really want to study. Therefore, it is always good to **first put the data aside** and discuss the research question and problem description with your supervisor before analyzing the data.

In structuring your thesis, it also helps when you make a table of contents, **giving all the chapters a (preliminary) name**. Next to that, also briefly indicate what you want to write in each chapter. Needless to say, always discuss these with your supervisor.



3 . Write an engaging introduction

The first question to answer is what do you want your introduction to contain? Do you only want to have a motivation for your research question/problem description, or should it also contain a good problem description? Once this is clear, for the motivation of your problem, **find nice examples from the literature**, or maybe you have a company or institute where this problem/question is very relevant. Always make sure that for the claims that you make, you have references to back up these claims: your thesis is an academic piece of work, so your personal opinion (or that of your supervisor) is not relevant, claims only count when they are backed up by literature.

This is still not answering the question on how to write an engaging and captivating introduction. Every person has her/his/their own style of writing, which certainly develops over time. To see what you like, my advice is to read, read, read! **Read academic articles and see how the authors motivate the problem that they are considering**. You can also read other theses. André posted links to some previous bachelor theses and for master theses there is a database at the website of the university library: when a thesis is marked as TOP Thesis, then it received a high grade.

4 . Stay focused during writing sessions

For many students (and researchers as well) writing is a difficult process. Sometimes (many times) it can be hard to find the right words. Accepting that your writing is not perfect, helps to get a start. Often it is better to **make sure that the basic message that you want to bring over, is on paper**. Then, thereafter, you can improve piece by piece.

For me, writing a paper is also not a linear process, where I start with the introduction and end with the concluding remarks. Often, I jump between different sections and write the introduction as the last part; this is also true for the first sentence of a chapter/thesis. It also helps me when writing a section, to **first write some bullet points on what the message that should be in this section**. Then, one for one, I can work out these bullet points to some nice text.

5 . Do's and Don'ts

- **Do** send updates to your supervisor on a regular basis
- **Do** stick to the agreements that you make with your supervisor
- **Do** send things to read in advance to your supervisor: (s)he also has other obligations, thus allow for some time to read
- **Do** discuss with your fellow students; even though they are writing on a different topic, they go through the same process and might have some useful experiences from which all of you can learn.
- **Don't** submit your final thesis before discussing it with your supervisor
- **Don't** stay away from your supervisor
- **Don't** contact your supervisor for every tiny question: do try to resolve them yourself and gather all of them to receive some feedback from your supervisor



6 . Final words of advice

It is okay to “swim in deep waters” in the beginning, not knowing where you are going to, but make sure that after some time, you find the direction to go back to the coast (of course, with the help of your supervisor).

As mentioned before, **look at other theses and see how these are structured**. You do not have to invent the wheel again; make use of best practices.

Christopher's Tips



1 . Choose a thesis topic

For me, that was/is an easy question. When I was a student and I had to pick a topic for my thesis, I opted for **the topic I could see myself enjoying the most**. So, my advice can only be to do the same.



2 . Structure the thesis

This is a much tougher question, I feel. Writing and structuring a thesis is something almost everyone can do. Writing it well and structuring it effectively, not so much. A friend of mine who is a professional screenwriter always puts it this way: **Writing is rewriting**. The bottom line being that you need to be prepared to rewrite it all. Several times even. On the other hand, that also means that you do not have to aim for perfection when writing your first draft.

3 . Write an engaging introduction

Again, the key for me lies in rewriting. **The introduction should be the part of your thesis that you write (or rewrite) after everything else is written (or rewritten)**. When you jot down your ideas on the path towards that point, then you can draw on a big pool of ideas later. Another tip is to **read and analyze a lot of texts from authors** that you find to have an engaging and captivating style in order to learn from them. Well-published scientific papers usually have rather well-written introductions.

4 . Stay focused during writing sessions

Working on the same topic for a long time can be frustrating. No doubt about it. But that is not to say that the effort you put in is to no avail. Quite to the contrary. You just need to accept that a well-written thesis takes time. To this end, **meeting with your colleagues at the library for longer writing sessions** is an excellent commitment device. Plan the coffee breaks ahead of time, take ear plugs (or ANC headphones) with you and set up a rhythm for yourself. I basically did this every working day of the week for six up to eight hours.

5 . Final words of advice

Make sure to **have full control over distractions** such as streaming services, social media, etc. This is why meeting with colleagues at the library works so well as a commitment device. **Make writing your thesis your full-time job.** I always thought about my own thesis in the following way: This may be the last time I am doing this in my life, so I might as well give it a serious go. Put differently, I allowed myself to become obsessed with my thesis/topic for a couple of months. Never had this much fun with mathematics before.



Writing a thesis is a memorable experience, and an important part of everyone's studies. I still remember the time so well when I was writing my thesis, probably more than many other courses during my studies. I studied mathematics, with some computer science courses, and in those days, students had to write only one thesis, at the very end of their studies.



I decided to follow a passion of mine at that time, and wrote my thesis on chess programming, which is a part of artificial intelligence that investigates how to write a computer program that can play chess well.

I still remember many details of my research, including reading about the theory, having my own discoveries, and writing a (relatively simple) code that could analyse a chess position and recommend a move. It was a journey of enjoyment, and sometimes a bit of excitement on how to complete such a large individual project. I am glad that I had the opportunity to write a thesis, and I am looking back fondly to that time. By now, of course, I have also experienced the other side of writing a thesis, multiple times, as a supervisor.

One can write a long and detailed list of advice on how to choose a thesis topic and on how to write a thesis (one could write a thesis on this). Which piece of advice is more important in your case will depend on many factors, among others on your interest and knowledge, and on the way you usually study.

The thesis coordinator and your thesis supervisor will give you advice and help you on your way, with specific guidance and support. So now, instead of attempting to write a complete list, I would rather focus on a few points that I noticed as a student and as a supervisor:

🎓 Obviously (although this stage has passed for this academic year), I recommend **choosing a topic that lies in your interest and fits your future plans** (in terms of knowledge and skills), if you have any at this point. Having such a topic makes it more interesting and even more useful to write a thesis, and this keeps you motivated and helps you stay focussed.

🎓 Follow the advice of your supervisor (very important!) in all stages of your thesis. Your supervisor can help you better if you **ask specific questions when asking for help or feedback**.

🎓 Writing down your thoughts in a clear and attractive way is not always easy, so do not underestimate it and start in time. **Make sure that each paragraph has a clear purpose** and contains not more than one main argument, and that the paragraphs are connected and logically build on each other.

🎓 Make sure that your time management is solid: **progress every week according to the plans** (and do not procrastinate, which is a common mistake), and **keep enough extra time for unforeseen events**, such as for working out interesting additional results that you discover later or being distracted by unexpected events and circumstances. If you are on track, you will also feel more motivated and it will be easier to focus on writing your thesis.

🎓 Last, (try to) **enjoy** the experience of writing a thesis, which is, as I wrote, a special part of your education.

🎓 The **introduction requires special care**: you need to describe the problem, the motivation, the background, your approach, the challenges, and the results in a clear manner and with a pleasant flow. The paragraph structure is even more important here.



🎓 Read the earlier parts of your thesis regularly and polish the text as much as you can. **Reading the text after a few days again** can help to improve the structure, clarity and coherence.

🎓 This is something I profited a lot from, although it might be just something typical for me: to **“keep” the topic and the questions on your mind** and think about them very regularly, as it helps you to stay within the topic and gives you more and deeper ideas.

🎓 **Think on both the macro and the micro** sometimes you need to zoom in on a specific question or detail for some time, and sometimes you need to think how this fits the entire structure of your thesis.



1 . The mysteries of writing a thesis

Writing a thesis typically marks the end of a study programme for a student. When you read about the specific goals of a thesis, whether that is for a Bachelor or Master programme, you will find something like “**The thesis will demonstrate the knowledge, skills and competences that a student has acquired during the study.**” One sentence that may sum up all the different aspects there are to those couple of months that you spend writing your thesis, but also covers up all the different moods you might encounter: excitement, struggle, joy, fear, relief, exhaustion, and satisfaction, and certainly quite some more. From my experience as a thesis supervisor, I am happy to share some thoughts and tips for your upcoming thesis projects.

2 . Why are you writing a thesis?

Obviously, writing a thesis is part of the requirements to obtain the desired degree. However, as a student it also gives you the chance to finally **find out what and why you have been studying certain things in the time leading up to the thesis process.** You should cherish that opportunity and not only take it as any other assignment that you must fulfill or any other course that you have to pass. Moreover, as much as you will enjoy finally having finished your thesis, it is also the process with all its experiences to get there from which you will learn a lot.

3 . You and your supervisor

While writing a thesis is mainly the task of you as a student, **a thesis project also is a collaboration between you and your supervisor.** When it comes to the time when students get to know their thesis supervisors, some are relieved, some are afraid, and some may have no idea what to expect. You might have heard stories about your supervisor from fellow students or already experienced him or her as a teacher in one of your courses. And yes, you are right: every supervisor is different.



Some are very organized, while some others are less so. Some respond to emails and questions quickly, and some you have to chase for an answer. Some are very eager to be part of the research project, and some may just consider it as part of their teaching duties. Believe it or not: from a supervisor point of view the same is true for students. Hence **it is very important that you and your supervisor clearly communicate from the beginning your expectations**. Explain your way of working and communicating, your goals for the thesis project, possible time constraints, and ask the same from your supervisor.

4 . Get organized

When you follow a course usually the timeline is given to you in advance: turn in homework by a specific date, give a presentation on another date, and write the exam at the end. This is completely different when you write your thesis. You will be responsible for making a plan and manage your time. **Set yourself some milestones, taking into account your other courses and activities, and discuss those with your supervisor** (don't call them deadlines - for sure you will not die if you miss one of them). Moreover, **get your notes and files organized**. During the whole project you will likely collect a lot of notes, emails, calculations, examples, data, possibly source code, intermediate write-ups, etc. After a while, in particular when you start to write your thesis, you will appreciate finding those things back easily.

5 . Your thesis subject

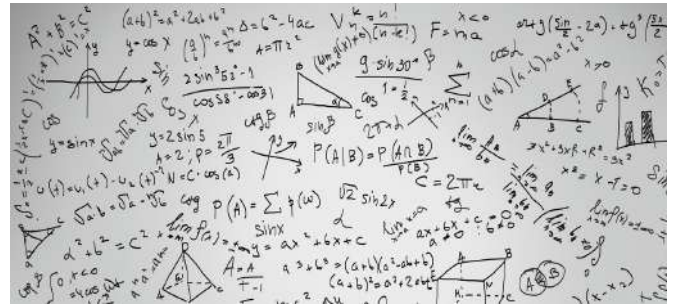
Your thesis project is not a single assignment or exercise. While your thesis topic or proposal gives a short summary of the research you are about to do, **a project and a topic typically evolve over time**. As you go along and find different work in the literature, find different data sets, or create new ideas, the precise problem that you are working on will emerge. That is nothing to be afraid of and a very important part of the research process.



6 . Writing a thesis

Besides all the time that you spend on the research of your project, eventually you must write your thesis about it. Although it may sound silly: do not underestimate the time to write it! **Make thesis writing part of your time plan and frequently check yourself and also with your supervisor if you are on a good track**. Nothing is worse than having to rush and write down all you have done for a few months in a few days. In the end, the thesis is the only “product” you can show, and it is also for the major part how your bachelor thesis project will be assessed.

Moreover, it is important to have a good structure set out for your thesis. This will also help you to organize the different steps of the research process. **Discuss with your supervisor what a good structure for your thesis is and do get his or her help and advice** on the different parts of the thesis. Also, do agree with your supervisor when and in which format you can ask for feedback on a draft version of the different parts.



Especially in a field like Econometrics & Operations Research, where we focus a lot on the description of mathematical problems and techniques, **it is important not to lose sight of the greater picture**. You should reserve enough time to elaborate in your thesis about the background and motivation for your research, possible implications and limitations of your results and a potential societal or business background. In short: **do not leave the last day to write a one-page introduction and conclusion part of your thesis**.



Surely, all the above can never cover all aspects and difficulties that you will come across when writing a thesis. If you are struggling or have the feeling things are not going forward as you would wish, **do not be afraid to talk to your supervisor or to fellow students**. Sometimes it helps to get some distance from the project and relax, so that you can focus better on the thesis work afterwards.

Finally, probably much better than any of the tips above, is **what you can learn from other students' experiences**. I am very grateful that our former student Wout de Vos has shared his thoughts on his bachelor thesis project in a very nice and helpful essay: "What I've learned" is always available to students currently writing their bachelor thesis. If you are curious as well to read it feel free to contact me via email.

That just leaves me wishing all of you good luck with your thesis projects. **It's you who determines the path towards a successful completion of your study programme!**

Stephan's Tips



1. Structure the thesis

I think it works best if you **approach the thesis with the goal of telling a story**. Do not treat it as an assignment for which you have to tick boxes, but try to make it one coherent story. Put yourself in the shoes of a reader who is not necessarily your supervisor that knows exactly what you are going to write about. If you were to read a thesis of a fellow student, how would you like the story to be structured? I think it is good to keep this perspective in mind throughout writing the thesis.



2. Write an engaging introduction

It is again crucial to try to view your thesis through the eyes of another reader, in particular a reader who is not very familiar with what you are going to do.



You want to make clear in the introduction **why the reader should keep on reading**. It should therefore be clear from reading the introduction not only what exactly you are going to investigate (a clear research question) but also why you think this is important and worth studying. It can for example help a lot if you can **relate the content of your thesis to a concrete example** - that can be understood without being an expert in the field of research - that immediately illustrates why your research matters.

3 . Stay focused during writing sessions

I would say mostly **try to avoid long writing sessions!** Try to split up your writing over the whole thesis period, and do it not in long sessions where you want to achieve a lot, but rather take small steps one at a time. Writing can be very difficult, and particularly getting started can be very hard. **When you write the first version of a paragraph, do not be too critical on yourself.** Just try to write it down even though you think it is bad. It is much easier to revise and polish something you have already written, than to try to write down the perfect paragraph from the start. Being too critical will prevent you from making any progress, and will just have you staring at your screen.

4 . Final words of advice

Do not leave the actual writing of the thesis to the end. While you do the research, immediately write down your research to be included in the thesis. At that moment what you are doing is still fresh, and it is the easiest to write it down. It is fine if this is just a rough version that you will need to revise later on, as mentioned above this is much easier than trying to write down a perfect version from the start. The longer you wait with writing, the bigger the hurdle you have to take to get started.

Another advice would be to **organise regular meetings with your supervisor.** Discuss with your supervisor what frequency would be appropriate for meetings, and then try to stick with that (remember that it is your responsibility to make sure regular appointments are made and you cannot expect your supervisor to chase you to arrange a meeting). Even if you do not have that much to discuss, stick to your regular meeting schedule; the meeting can be short but at least it will help to keep the thesis in your mind and not postpone the work. Postponing the meeting until you have something to show to your supervisor, can again create a hurdle that leads to procrastination.



**Thank you to the supervisors for their valuable advice,
and good luck to all our members currently writing their
thesis!**

Vectum Book Club



By Chiara Venditti

Were you a book lover as a kid but then lost the habit? Or maybe you never were, but you feel like it would be nice to start reading more? Well, then this is the article for you!

Vectum asked fellow students for some book recommendations and gathered some of the answers to give you inspiration to rediscover the beauty of literature.

Literature classics: 

● **“Jude the Obscure” by Thomas Hardy**

by Marie

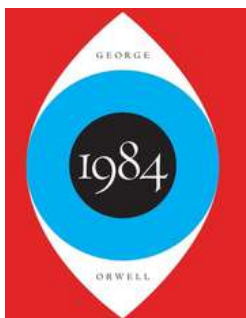
It tells the story of Jude Fawley, a working-class man who dreams of becoming a scholar in Oxford. However, his ambitions are repeatedly challenged by the restrictions and limitations imposed by his social class and the society he lives in. This novel is a critique of Victorian society, including their views on marriage, education, and social class. “It will break your heart, but the writing is so exquisite that every tear is worth it!”

Do check the trigger warnings if you consider reading the book!



● **“1984” by George Orwell**

by Martin



This is a dystopian novella which follows the life of Winston Smith, a low ranking member of ‘the Party’, who is frustrated by the omnipresent eyes of the party and the Big Brother that control every aspect of people’s life. “It was nice to have a book that’s not all positive where you could already imagine how the story is going to end. The deeper I got into the story, the more exciting the book got.”

Books related to Maths:



● **“The Indisputable Existence of Santa Claus” by Hannah Fry and Thomas Oléron Evans**
By Tobias

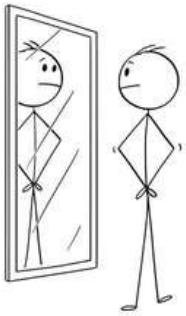
It shows how applied maths are so thoroughly interwoven throughout our everyday life by applying maths to some Christmas related topics.

Books that everyone should read:

● “Chinese Cinderella” by Adeline Yen Mah:

By Shashwat

It tells the story of a young Chinese girl, Adeline, who faces the struggles of being an unwanted daughter in an upper class household. She tries to find a place where she feels she belongs. “It is so captivating and emotional, and it had me sucked in from the beginning till the end. The book is just so well written and creates a great emotional connection between you and the reader. One of the best non-fiction books out there.”



“The Picture of Dorian Gray” by Oscar Wilde:

by Marie

This novel provides a deep insight into human nature, especially our tendency to pursue pleasure and beauty at the cost of morality and ethics. “Written in 1890, yet its themes are just as relevant today. In a world obsessed with youth and appearance, this is an essential read.”



A book we never get tired of:

● “The Hate U Give” by Angie Thomas:

By Bao

With the name originated from Tupac’s “THUG LIFE”, this young adult novel is about a sixteen-year-old girl whose life is turned upside down when she witnesses the fatal shooting of her childhood best friend. Inspired by the Black Lives Matter movement, this is a powerful novel about one girl's struggle for justice. “I’ve read it so many times and could still remember the first time reading it. I finished the book in one sitting and was overwhelmed by how much it changed the way I view the world.”



● “Holes” by Louis Sachar:

By Shashwat

The book tells the story of a boy who is sent to a correctional camp after being falsely accused of theft. “It is very well written, it uses simple yet very descriptive language. The characters are complex which creates suspense and mystery in the story, so that you won’t put the book down.”

Books that made us fall in love with reading:

● **"Digital Fortress" by Dan Brown:**



By Shashwat

It explores the theme of government surveillance of electronically stored information on the private lives of citizens. It centres around Susan Fletcher, a head cryptographer, who fights a computer worm that intends on releasing the government's data to the world. 🐛

"This book introduced me to the genre of thriller. Dan Brown's style of writing is just on another level. It pulls you in with all the tense drama, red herrings, page turning action and keeps the reader on the edge of their seat until the end."



● **"The World According to Garp" by John Irving:**

by Marie



It tells the story of T.S. Garp, a writer who struggles to find his place in the world amidst a series of tragic events. It is a poignant and thought-provoking exploration of the complexity of human relationships and the challenges faced by those who do not conform to societal norms. "This book really impacted me".

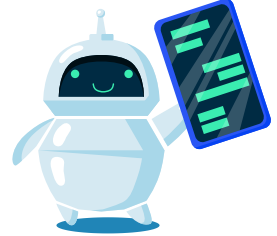
In conclusion, these recommendations from Vectum members offer a wealth of diverse and engaging reading options. From thought-provoking books to captivating novels, there's something for everyone on this list. I personally can't wait to dive into some of these books myself and discover new authors and genres. I want to thank all of the students who shared their recommendations and encourage others to contribute their own in the future.

Let's keep the conversation about great books going!

THANKYOU



A Unique Perspective on living with AI



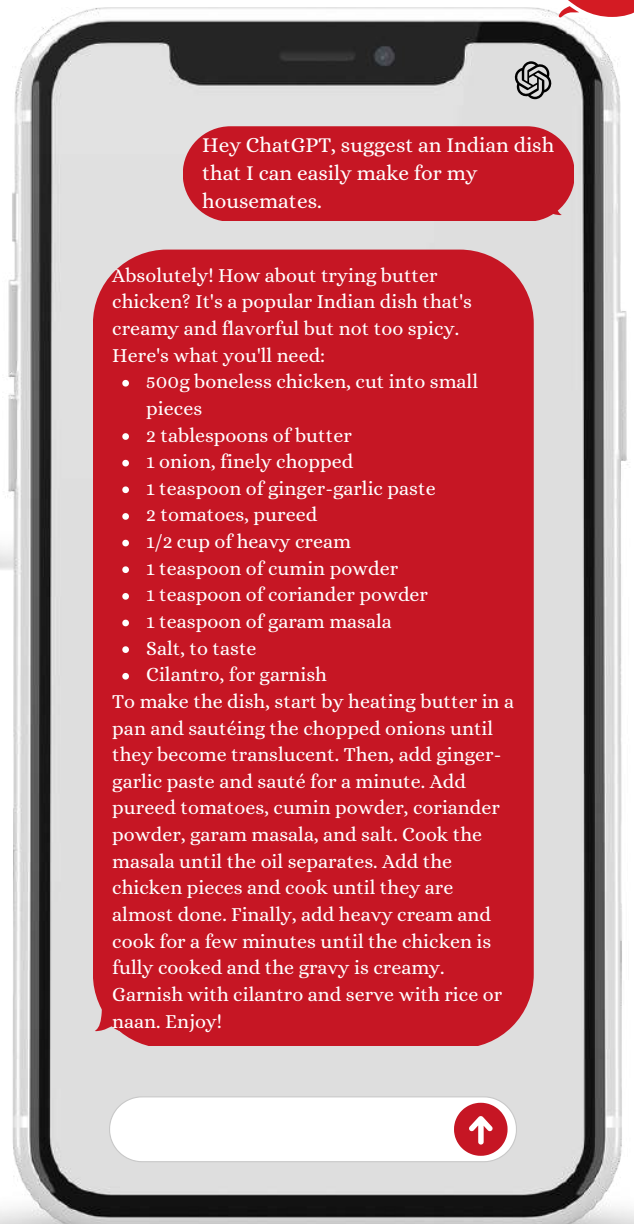
By Aashia Chanana

Like a guinea pig in a test lab, I handed over the control of my life to the famous AI chat box for 24 hours to find out what happened. This powerful AI technology is capable of generating human-like responses and understanding natural language. However, when told to make decisions, Chat GPT respectfully reminds us that it is not a human with biased decision-making skills and it can only give us suggestions; the final choice is ultimately ours.





The Godfather



APRIL 2023



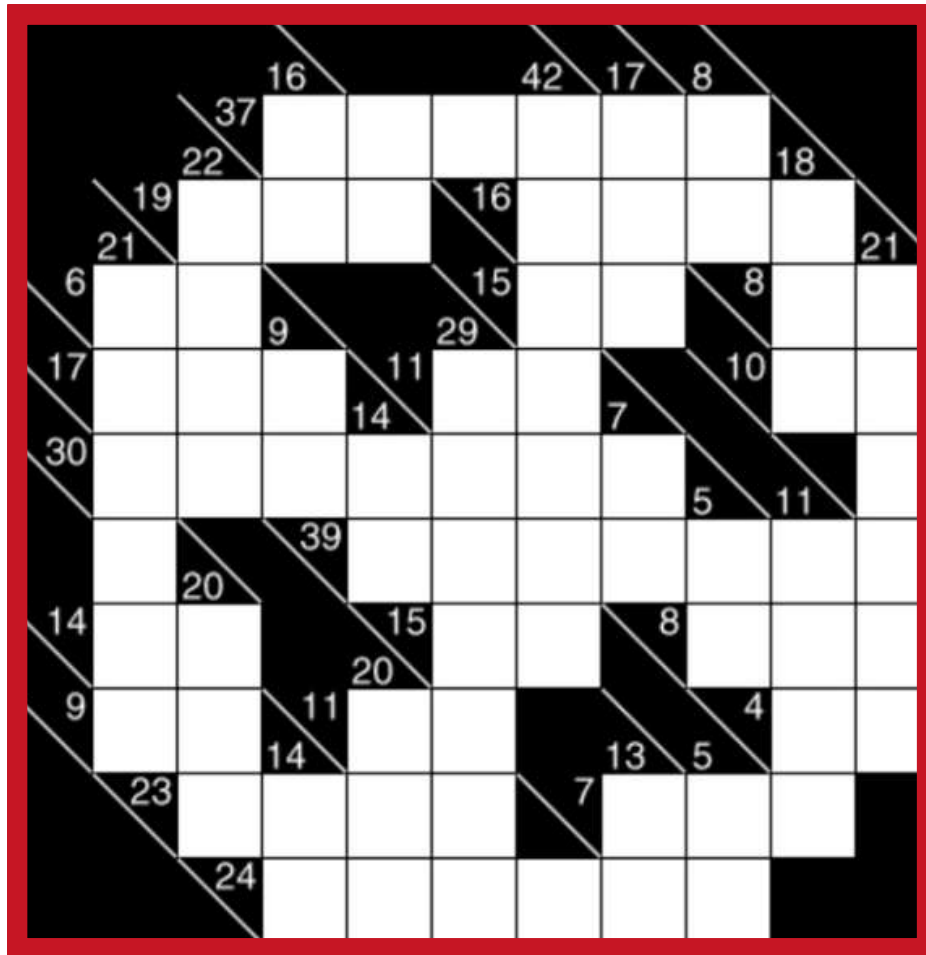
Carnaval '23



Math Puzzle

Be the first person to solve this puzzle and win a prize!

#PaidByVectum



Fill each cell in the grid with a number from 1 to 9, such that the numbers in each horizontal and vertical "run" add up to the specified sum.

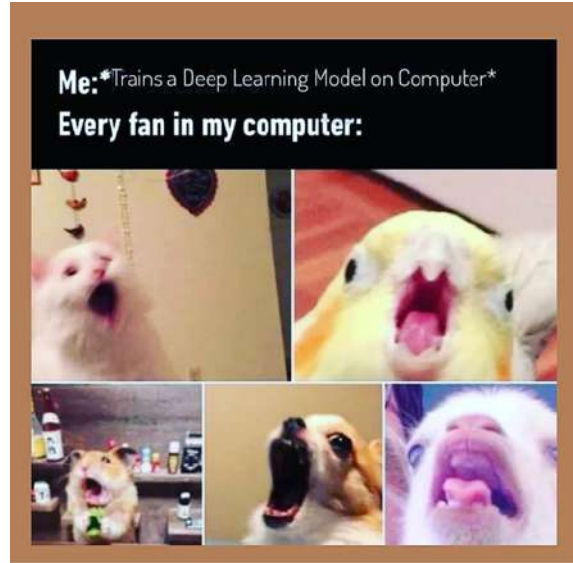
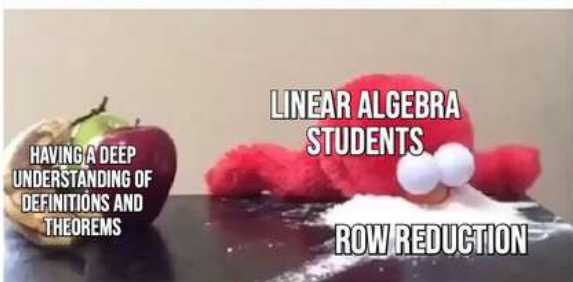
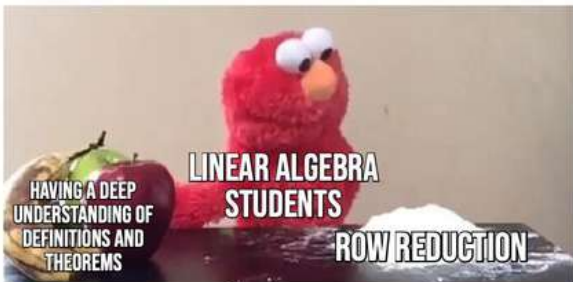
Send your solution at secretary@vectum-maastricht.nl

Memes

When I'm asked to prove anything:



When your professor keeps saying "keep this in the back of ur mind, it'll be on the exam"



When they open Powerpoint and you see slide "1 out of 243"



Them: How long have you been doing machine learning, data science?

Me: It has been more than 5 years!

Them: So, what is P-value?

