VU VRIJE UNIVERSITEIT AMSTERDAM | SCHOOL OF BUSINESS AND ECONOMICS

Self-Evaluation Report

2015-2020

Content

1. Introduction

The Faculty of Economics and Social Sciences was founded in 1948 as part of the Vrije Universiteit Amsterdam. Over the years, an independent faculty for business and economics developed, adopting the name School of Business and Economics (SBE) in 2017 to reflect the School's internationalization and international reputation. SBE currently has over 9,000 students (bachelor, master's, and postgraduate) and 500 employees, including around 80 professors. SBE occupies seven modern, transparent floors of the main building of the Vrije Universiteit, on the edge of the Amsterdam Zuidas business district, close to Amsterdam Schiphol Airport.

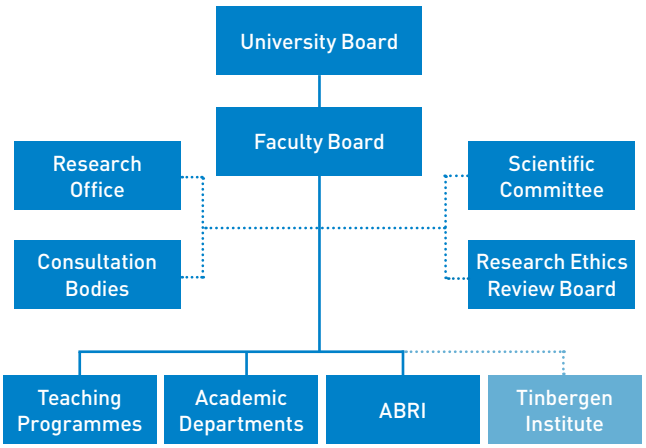
From its early days, the school has promoted the idea that excellent research, high-quality teaching, and societal impact go hand-in-hand. For instance, the school was the first in the Netherlands to offer executive education in business. The research-inspired teaching of our faculty has cradled many (prime) ministers, excellent scholars, top civil servants, entrepreneurs, and top managers in the business world. We believe that state-of-the-art knowledge of business and economics is needed to understand and solve organizational and societal issues. Therefore, we develop theoretical, empirical, and actionable research contributions in business and economics, generating scientific impact by publishing in top journals and societal impact through local and global engagement. That is *Science with Purpose*.

1.1 The structure of the School of Business and Economics

SBE is managed by the Faculty Board, chaired by the Dean (currently Prof. Arjen van Witteloostuijn). The Faculty Board is responsible for research, teaching, and operational management and is directly accountable to the University Executive Board. Besides the Dean, the Board further consists of the Vice Dean of Research, the Vice Dean of Education and the Managing Director Operations. Together they decide on the strategy and management of the School, with the Dean being ultimately responsible. The Faculty Board appoints Heads of Department, Vice Deans and Associate Deans, the ABRI Director, the Doctoral Directors, the Scientific Committee and the Research Ethics Review Board.

The Vice Dean of Research (currently Prof. Hans Berends) is responsible for research policy at SBE. The Scientific Committee — consisting of representatives of all the departments and chaired by the Vice Dean of Research — offers advice on research policy, including the school's PhD policy. The Research Office helps shape and implement research policy and supports researchers with external funding, data-management, privacy and other research-related issues. Furthermore, the Research Office is responsible for recruiting and monitoring PhD candidates in collaboration with the graduate schools.

Figure 1: Organizational structure, SBE.



1.2 Academic departments

SBE is organized into ten academic departments, each headed by a full professor. These departments are the primary intellectual homes of our researchers. Indicative of SBE's adaptiveness, the number and composition of departments has changed since the last assessment in 2015, resulting in the new or independent departments of Econometrics and Data Science (EDS), Operations Analytics (OA), Ethics, Governance and Society (EGS) and the KIN Center for Digital Innovation. The formation of these departments reflects our attention for emerging fields like data science and digital innovation and the growth of multidisciplinary research at the interface with other faculties.

Accounting
Prof. Tom Groot, succeeded by Prof. Henri Dekker in 2021
The department's research covers accounting, auditing and law. Some of the main topics are the development of financial reporting frameworks and practices, the use of information for controlling organizations and alliances, the identification and measurement of audit quality and regulatory compliance.

Economics
Prof. Maarten Lindeboom
Researchers in the department of economics have been involved in designing new school-matching mechanisms, regulation and competition policy and policy evaluation in development, labor and health care. They also do fundamental research on the micro foundations of macroeconomics, mechanism design, big data, microeconometrics and geno-economics.

Econometrics and Data Science
Prof. André Lucas
The core interest of the department's research is the development of econometrics and statistical methods that can be used in the daily practices of economic and financial policy-making, decision making, forecasting and policy evaluations. Researchers address the following themes: theory and methodology for econometric and statistical methods, empirical econometric modeling, data science and statistical methods for high-dimensional data, financial econometrics, structural and causal modeling, time series processes and dynamic econometrics and forecasting methods.

Ethics, Governance and Society (EGS)
Prof. Kees Koedijk
EGS is a multidisciplinary group of scholars focusing on governance and ethics issues related to decision making in organizations, institutions, markets and society. Drawing on insights from a variety of disciplines in the social sciences and humanities, and a wide range of methods (including philosophical and formal logic and mathematical modelling), EGS develops theoretical and formal frameworks that provide insights into social dynamics and their ethical and governance aspects.

Finance
Prof. Utz Weitzel
The department's research deals with financial decision-making for individuals, corporations, and financial institutions and its consequences on the behavior of financial markets. The work is elaborated across four lines of research: financial management and corporate finance, financial markets, banking and regulation and behavioral finance. Typical keywords are asset pricing, risk management, asset/liability management, corporate finance, derivatives, commodities, volatility modelling, banking, regulation, financial stability, financial decision-making and household finance.

Knowledge, Information & Innovation (KIN)
Prof. Marleen Huysman
The department studies the development of digital innovations and the intended and unintended consequences of digital technology use for organizations. Researchers look beyond the hype and actively engage with organizational professionals who are managing, developing and using these new technologies. The department uniquely integrates expertise covering the wide field of digital innovation from the development of smart technologies in ecosystems to changing work practices under the influence of AI, and from crowdsourcing through online platforms to the changing role of IT departments.

Management and Organization
Prof. Svetlana Khapova
The department's research covers the fields of entrepreneurship, organization theory, international business, organizational behavior & HRM, management consulting and strategic management to (a) to create knowledge that can enable organizations to understand and proactively manage the current shifts and realignments in employment practices, technology, demography and organizational structures; and (b) to understand and explain organizational phenomena in the context of global competition.

Marketing
Prof. Peeter Verlegh
The department's research covers all three subdisciplines within the field of marketing: consumer behavior, marketing strategy and modeling. Research in the Marketing department is characterized by a strong emphasis on relevance for business and society, and is centered around social marketing (e.g., health, sustainability and public policy).

Operations Analytics
Prof. Wout Dullaert
The Department of Operations Analytics studies how data can be transformed into better decisions for a variety of processes and operations. Research efforts are aimed at analyzing data-driven decision-making problems arising in industry and society, in particular related to logistics and supply chain management, sustainability and networks.

Spatial Economics
Prof. Erik Verhoef
The department's research addresses four interrelated themes: urban and regional dynamics (agglomeration economies, housing markets, regional labor markets, migration), land use (rents, spatial externalities, flood risk, spatial planning), transport (congestion, network reliability, accident risk, sustainable transport, transport policy), and environmental and resource economics (biodiversity, agri-environmental schemes, renewable resources, the green paradox, climate change adaptation).

We believe that **state-of-the-art knowledge** of business and economics is needed to understand and solve organizational and societal issues.

1.3 Research institutes

Research at SBE is divided into research in business and research in economics (including econometrics and finance). The work is supported by two research institutes that offer postgraduate training and PhD supervision and contribute to an environment conducive to high-quality research:

- Amsterdam Business Research Institute (ABRI). Researchers from the departments of Accounting, EGS, KIN, Management and Organization, Marketing, and Operations Analytics participate in ABRI.
- Tinbergen Institute (TI), in which the Vrije Universiteit, the University of Amsterdam and the Erasmus University Rotterdam collaborate. Researchers from the departments of Economics, Econometrics and Data Science, EGS, Finance and Spatial Economics participate in TI.

In this report, we describe the mission, strategy and accomplishments for SBE as a whole, and differentiate where relevant between business and economics — in particular with regard to the PhD programs offered at ABRI and TI.

2. Mission and strategy

2.1. Mission: *Science with Purpose*

The School of Business and Economics is part of a well-established research university, with a focus on scientific and societal impact. The mission of the Vrije Universiteit Amsterdam is rooted in three core values: *Open*, *Responsible* and *Personal*. Building upon those core values, SBE has its own mission and strategy: *Science with Purpose*. This mission emphasizes SBE's unique characteristics as a research-oriented business and economics school that aims to contribute to academia, business and society at large. We believe in synergy between research, teaching and societal impact, and encourage faculty to have a triple orientation: pursuing high-quality innovative research, empowering students using state-of-the-art theory and methods and engaging with partners from business and governmental institutions.

Science with Purpose

Vision

We live in a world where business, society and environment are closely related, and interact at an increasingly global scale. It is therefore essential that people and organizations have profound knowledge of the mechanisms of economics and business, but also understand and embrace individual and cultural differences. This knowledge helps them make decisions that have a positive impact on the world and the lives of others.

Mission

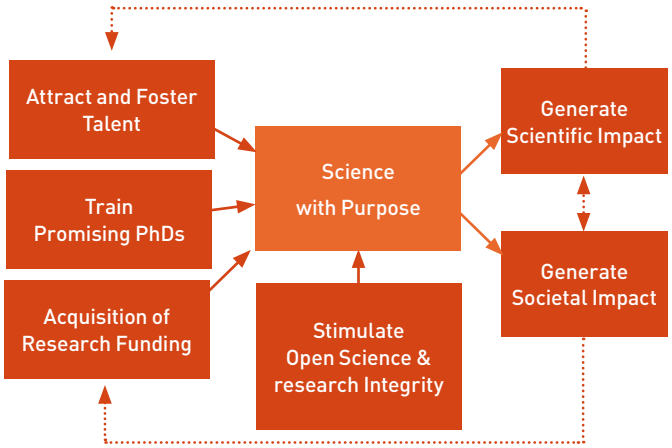
Let's be the business school of choice for ambitious people and organizations, who believe that collaboration, openness and social responsibility are the way forward. For science, for business and for humanity.

Rooted in a tradition of independence, we are an academic institute that provides a stimulating and inclusive environment. Here, people learn, develop knowledge, grow their potential, and find their purpose. We encourage them to shape the future responsibly, as academics, professionals and citizens.

2.2. Strategy

In line with our mission, our strategic aim is dual: *generate scientific impact* and *societal impact*. Other strategic aims concern the means to do science with purpose: *attract and foster talent*, *train promising PhD candidates* and *acquire research funding*. A final strategic aim is to *encourage open science and scientific integrity* as a condition for Science with Purpose. These strategic aims are summarized in Figure 2. In the coming sections, we discuss each of them in turn. Chapter 3 contains evidence on accomplishments with regard to each of these aims.

Figure 2: Strategic research aims of SBE



2.2.1. Generate scientific impact

The generation of scientific impact by SBE researchers rests on three core principles: (a) quality, (b) autonomy and (c) community and international networks.

Quality

To generate scientific impact, we aim for high quality research. We seek to publish our research in top academic journals upholding the highest criteria for rigor and novelty, thereby increasing the impact our research has in our fields. Our approach to research time allocation and tenure & promotion decisions builds on an objective and transparent system for the valuation of publications. We use Article Influence score Percentiles (AIPs) as an advanced and robust measure for the average influence of articles in a journal. An evaluation by SBE's scientific committee, in 2020, confirmed that the resulting rank ordering of journals strongly matches with subjective assessment of the rigor and novelty required by journals, and hence, their visibility.

Figure 3: Collaborations of SBE researchers in the last five years.

SBE allocates research time to tenured faculty based on proven (rather than predicted) quality. Quality is favored over quantity: only the five best publications in the previous five years are counted. This system stimulates the pursuit of excellence and provides more research time to successful researchers. Publications in absolute top journals count longer than five years (AIP 0.96: six years; AIP > 0.97: seven years) in recognition of their exceptional value, the selectivity of these journals, and the time it takes to travel through their review processes. Acknowledging that work outside of the top journals can have significant scientific impact as well, researchers have the option to have one publication evaluated based on citations. Researchers can earn up to 50% research time. Staff members in the tenure track system get 40% research time for six years. Once tenured, they earn their research time following the guidelines mentioned above.

The same emphasis on quality, based on the objective and transparent AIP scores, is embedded in the career track that has been defined for promotion decisions from Assistant Professor 2 until Full Professor 1. For each level, publication criteria have been defined that encourage publication in high-quality journals. Moreover, for promotion decisions, researchers need to explain how their publications fit in their overall research profile, including international collaborations, leadership, and editorial positions.

Autonomy

Rooted in the VU's tradition of independence, we believe in the autonomy of scholars. Departments and researchers set their own research agendas, because we believe they are in the best position to decide which topics are important enough to pursue and with whom to collaborate. Researchers are naturally attracted to new and promising research questions that will enable them to make influential contributions, and they seek collaboration in a stimulating environment. This allows researchers to quickly adapt to emerging topics and establish collaborations that might straddle disciplinary boundaries. Therefore, instead of micromanaging the content of research, SBE seeks to reinforce departments' and researchers' intrinsic motivation to make high-quality theoretical and empirical contributions that are visible to the intended audiences. Using AIPs as indicator of quality — rather than predetermined journal lists — offers researchers the autonomy to choose topics, approaches and publication targets. Our approach enables different publication strategies and values core disciplinary contributions as well as multidisciplinary research.

Community and international networks

Embeddedness in an academic community and in international networks is needed to strengthen research capabilities and have scientific impact. Research is increasingly becoming a team effort. The departments of SBE are communities that provide critical mass to generate outcomes that could not be accomplished alone. Departments offer fertile ground through, for instance, shared research infrastructures, brown bag seminars, reading clubs and centers that profile research. Above all, departments offer colleagues with complementary profiles, hired based upon fit as well as diversity

in skills and profiles. Although performance evaluation for research time and promotion decisions occurs at the individual level, it incentivizes collaboration as the discount for co-authorship is limited (research time allocation) or absent (tenure and promotion decisions).

Researchers are also encouraged to build their international academic networks through collaborations, conference participation, research visits, and editorial board membership. International networking is facilitated, for instance, through the visiting professor program and seminar series organized by ABRI, and TInbergen lectures and yearly conference organized by TI.

2.2.2. Generate societal impact with research

The *Science with Purpose* mission means that we aim to generate a positive impact on the world and the lives of others, from local engagement with organizations in the Zuidas business district to global contributions to sustainable development goals. Core principles are (a) synergy between scientific and societal impact, (b) variation in pathways to societal impact and (c) the provision of supporting structures.

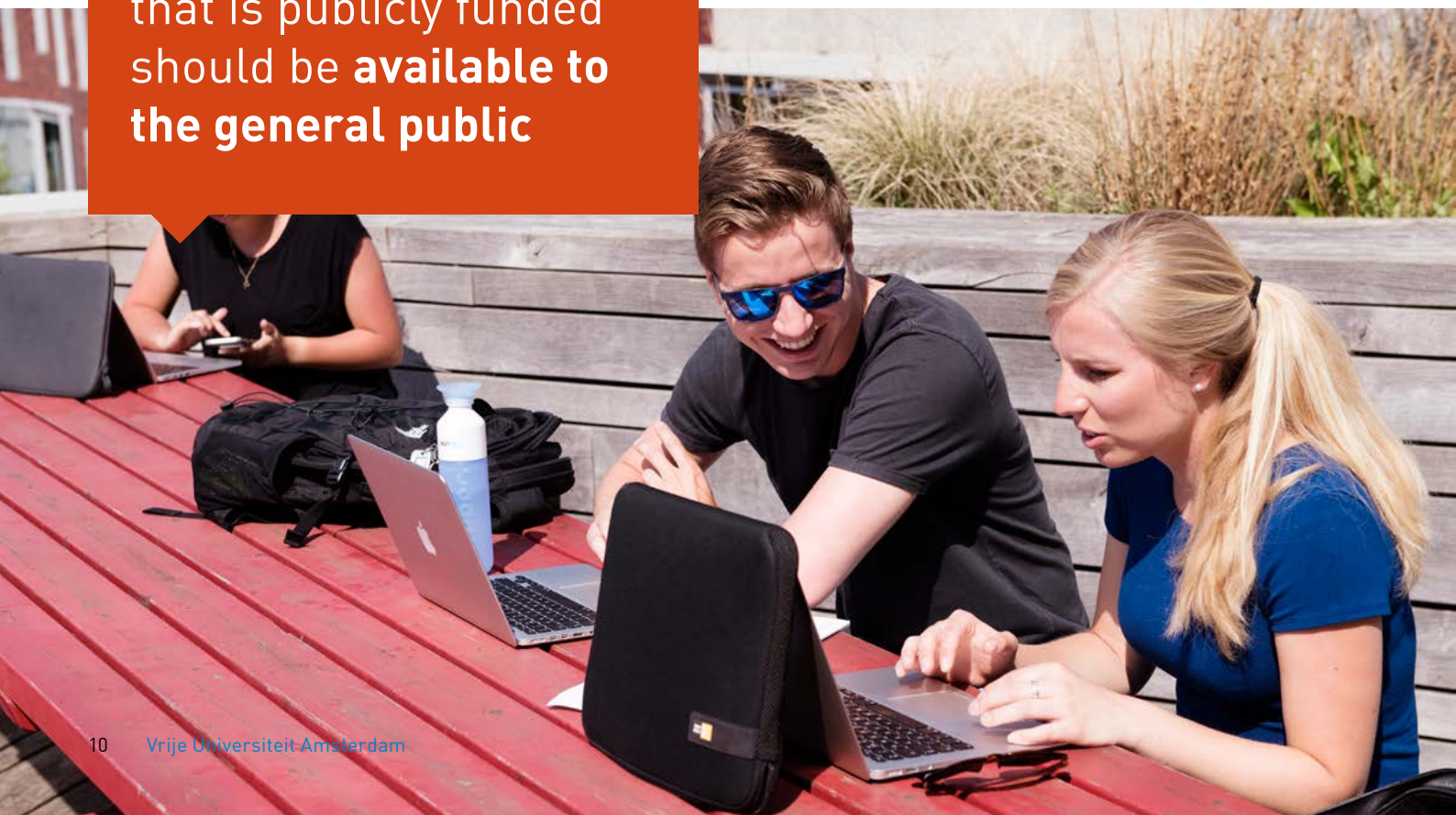
Synergy between scientific and societal impact

Societal impact is not an afterthought — it is an integral part of research. Engaging with business, government and society at large contributes to breakthrough research, facilitates in-depth insight into new developments and pressing questions, and provides access to data. Vice versa, engagement over the research life cycle helps to create impact via research outcomes. Because we believe in synergy between research and engagement, SBE sees the generation of societal impact as an imperative for all researchers.
We embed criteria for societal impact in our career track, with expectations increasing with seniority. Following our principle of autonomy, we do not prescribe specific activities but indicate and facilitate the palette of options for researchers. To prepare new generations of researchers for realizing the dual aims of scientific and societal impact, we offer a PhD level course titled 'Generating Impact with Academic Work.' Further, we have integrated faculty who were previously in the Executive Education department into the academic departments, to leverage industry networks and infuse executive education with research insights. A great example of how scientific quality and societal impact can go hand-in-hand is ABRI's Executive PhD program.

Various pathways

Impact on business, government and society at large can come in various forms. We recognize multiple pathways: (1) societal impact through communication about research, such as practitioner-oriented publications, as well as media exposure, tweets and podcasts; (2) structural collaboration with partners, such as research projects with companies and for governmental organizations, and membership of advisory councils; and (3) contract research and teaching, such as in-house executive education programs, workshops and master's classes. Our insights into the mechanisms of business and economics help to address a variety of Sustainable Development Goals (SDGs), which we use to orient external collaborations towards shared long-term ambitions.

As a matter of principle, research that is publicly funded should be **available to the general public**



Support for societal impact
In 2018, SBE appointed an Associate Dean for Business and Public Engagement and created an Engagement Support Office that helps faculty to establish collaborations and create impact. Moreover, an Impact & Income Board was created to better develop, position and profile our research and education potential for profit and not-for-profit organizations. For this purpose, the Board facilitates external relations coordination ('account management'), acquisition strategy development and relationship management strategy development, and removes barriers to impact and income creation.

2.2.3. Stimulate open science and research integrity

In line with our core values of openness and responsibility, we have incorporated open science principles into our ways of working at SBE and continually foster an academic culture of integrity. We have discerned four pillars of open science and research integrity: (a) open-access publishing, (b) research data management, (c) open research practices and (d) research ethics.

Open access publishing
SBE is working towards 100% open access. As a matter of principle, research that is publicly funded should be available to the general public. Moreover, open access publications get more attention, more reads and more citations, and thus have more impact. In 2020, we made open access availability a condition for publications to count in performance evaluations for research time allocation. Before mandating this, we ensured that open access publishing was feasible and easy. We encourage multiple routes: gold (full open access journals), hybrid (as covered by transformative VSNU deals) and green (availability through an institutional repository). Importantly, in tandem with the university library, we made it easy for researchers to use the 'Taverne amendment' (to article 25f of Dutch copyright law), allowing authors to share journal articles and book chapters through an institutional repository after six months.

Research Data Management
In 2017, SBE first formulated a Research Data Management (RDM) policy. Our policy is oriented towards facilitating *integrity* (transparency and research verifiability), *security* (to avoid data loss and comply with legal and ethical guidelines, in particular for privacy-sensitive and confidential data) and *reusability* (e.g. through adequate documentation and archiving). To implement our RDM policy we have appointed a data steward who advises researchers on data management across the research life cycle. They support researchers with writing data management plans (using DMPonline), offer RDM training to SBE PhD candidates, advise on storage options (such as the recently implemented Research Drive as solution for sensitive data) and archiving solutions. To ensure GDPR compliance, the School has appointed four privacy officers who received training from central legal privacy officers, and who support and advise the faculty researchers on privacy issues with regard to GDPR legislation and data processing agreements.

The sharing of data, code and other intermediate products can help **accelerate research progress**

Open research practices
At SBE, we stimulate open research practices, including increased transparency in research and the sharing of data, code and other materials. We welcome the transition underway in journal expectations — higher levels of transparency in data and analytical approaches — and funding agencies' requirements that data be FAIR (Findable, Accessible, Interoperable, and Reusable). The sharing of data, code and other intermediate products can help accelerate research progress and the more effective use of resources. We are happy to see that SBE researchers are increasingly using and promoting open research practices, for instance through preregistration of studies, and data sharing alongside publications. For example, the PhD course on Experimental Research Methods pays significant attention to preregistration, to guard against HARKing and p-hacking, and other transparency requirements. With our data steward, we have organized departmental and faculty-wide information and discussion sessions focusing on the requirements and opportunities inherent in increased transparency and openness.

We have made the first of the FAIR principles (Findability) mandatory. Although not all datasets can be made openly available (e.g., because of privacy and confidentiality issues when working with company data), most studies can still take the first step: make datasets findable by registering them. To count towards the allocation of research time, metadata

for datasets must be registered in our current research information system (PURE). Datasets that are already publicly available (for instance, on a publisher's website) become more findable this way. This measure also encourages the opening of datasets that are not restricted by privacy and confidentiality.

Research ethics

SBE has formulated and continuously updated its ethical guidelines for research with human subjects and installed a Research Ethics Review Board (RERB) to assess whether research proposals comply with those guidelines. Guideline compliance assessment is mandatory for any study using human subjects. We have created an online self-check that suffices for most standard research designs in our disciplines; in case of deviations, the self-check indicates that the entire application will be assessed by the RERB.

Finally, preserving scientific integrity is an important aspect of PhD candidate training. We organize seminars on scientific integrity to stimulate researchers' and PhD candidates' awareness of the various aspects related to scientific integrity. If researchers have the slightest suspicion that an academic staff member has violated scientific integrity rules, they can contact the confidential counsellor for academic integrity.

2.2.4. Attract and nurture talent

We are proud of the quality and commitment of our researchers. To attract and nurture high-quality researchers, we seek diversity and provide a stimulating and inclusive environment: we (a) recruit internationally and at various levels, (b) offer extra opportunities for female scholars and (c) offer development paths for all.

> ♀ SBE has several initiatives to encourage and **stimulate female talent** within our school

International recruitment

SBE casts a wide net across the international job market to recruit faculty members and PhD candidates. To recruit promising early career researchers and provide them with opportunities to develop their careers, SBE has been using a tenure track system for more than a decade by now. While most faculty members are recruited to fill tenure track positions, we also recruit strategically for associate and full-professorship positions, to strengthen academic leadership or give a quality impulse to an emerging area of research. In response to the prior research assessment in 2015, we have adopted a strict policy of not hiring internal PhDs for assistant professorship positions — rather, we guide them to pursue a career elsewhere.

Opportunities for female scholars

SBE has several initiatives to encourage and stimulate female talent within our school, and to redress gender imbalance by increasing the number of female faculty in higher academic positions:

- *SBE Hermine Weijland Fellowship.* SBE established the Hermine Weijland Fellowship in 2017 to attract and promote female academic talent. This prestigious fellowship seeks to encourage promising female academics to join SBE and improve the gender balance at senior levels. The fellowship bears the name of Hermine Weijland (1932-2001), who started at SBE in the

1960s, first as a student, and later as an employee. She was one of the first women to attain her PhD at SBE and went on to build a successful career as an academic.
- *Fenna Diemer-Lindeboom Chair.* Initiated by Vrije Universiteit Amsterdam, this program stimulates the advancement of female scientific talent and combats the underrepresentation of female professors. Female assistant or associate professors can be nominated for an FDL chair and appointed for a maximum period of five years. If they perform well, their chair will be converted into a permanent full professor appointment.
- *SBE Diversity Fund.* To increase gender diversity among academic personnel within our School and support talented female researchers' academic career development, the SBE Diversity Fund provides (a) extra time for female researchers preparing an ERC, Vidi or Vici proposal; (b) coaching, courses and training for female researchers; and (c) short-term student assistant or junior researcher positions to open up pathways towards an academic career.
- The research time allocation and tenure track systems have special regulations for female researchers previously on maternity leave, which were extended when evaluation of the tenure track system showed that female tenure trackers were less likely to get tenure.

Development paths for all

Our integrated career track policy clearly specifies the criteria for teaching, research and impact for tenure and the subsequent promotion stages from Assistant Professor 2 up to Full Professor 1. This transparent system, with its explicit expectations, is much appreciated by faculty. The successive steps invite researchers to pursue excellence in research by deepening and broadening their research profile, building international networks and developing leadership skills. The current system also allows for diversity in profiles, as employees have the option to be promoted based on excellence in one of three areas – research, teaching or impact – and compliance with basic requirements in the other domains. This helps to create a healthy balance of complementary profiles in departments.

2.2.5. Acquisition of research funding

SBE research funding has three components: (a) direct (i.e., a lump-sum budget allocated by the university); (b) by grant, including from competitions held by national science foundations (e.g., NWO, STW, ZonMw and KNAW); and (c) third party research, such as for EU-framework programs, NIH, industry and government (see Table 3 in the appendix).

Grant acquisition is stressed as increasingly important to the viability of research programmes and faculty careers. The Faculty Board has formulated clear expectations about grant applications to research councils (NWO and EU). For example, tenure track researchers are expected to submit a Veni proposal to the Netherlands Organization for Scientific Research (NWO) or to make an effort to obtain an important research grant in another way — for example, in collaboration with a senior researcher (NWO open competition or research consortia) — or to bring in external funds (EU, industry, government, etc.). Similarly, the criteria for promotion to associate professor specify that the candidate has to apply for funding from ERC or NWO investigator-led schemes, and promotion to full professor is aided by securing an ERC or NWO grant (or equivalent). Researchers who are in the process of submitting a Vidi, Vici or ERC grant will be allocated extra research time for the writing process: 0.025 FTE for the Vidi application, and 0.05 FTE for Vici and ERC applications.

Researchers receive support in the application process from the Research Office and the VU-level Grants Office in collaboration with Project Control (for budgeting) and legal officers (for research or consortium agreements). The Research Office organizes annual meetings with the heads of department to address and discuss research funding opportunities and select and invite individual department members to apply for certain funding schemes and programs. In this way, we can ensure that only promising, high quality proposals are submitted.

Furthermore, we offer support for collaboration with industry and government and obtaining external funding from these sources. SBE appointed an Associate Dean for Business and Public Engagement (Prof. Frans Feldberg) — chair of the Impact & Income Board of SBE, and member of the VU Impact Board (IBVU; co-chaired by SBE's Dean). The board increases the visibility of societal impact and contributes to sharing best practices. To develop enduring relationships, SBE strives for reciprocity in value exchanges with external organizations. The acquisition of funding from external sources should fit with researchers' academic ambitions. To create synergy with research, we primarily strive for contract research projects that also have merit for the advancement of research. SBE has also set up an Engagement Support Office to support its academic staff as much as possible in creating impact and generating income. To do so, this office aims to actively develop and share knowledge and best practices on business development and relationship management.

2.2.6. PhD policy and training

2.2.6.1. PhD policy and strategy

We aim to attract highly motivated, talented PhD candidates and further cultivate their talents through extensive supervision and training. We do this by welcoming them into an open, inspiring, international environment where knowledge exchange and research cooperation are highly encouraged, and by providing a safe, informal, friendly atmosphere. The doctoral programs at SBE — organized at ABRI and Tinbergen Institute (TI) — aim to develop PhD candidates well-equipped to pursue promising careers in research, either at a university or outside academia.

Only candidates with high grades in their (research) master's program are eligible to enter our PhD programs. We expect candidates to show a proactive research orientation and to be proficient in written and spoken English (as evidenced by a degree from an English-taught program or sufficient scores on a TOEFL or IELTS test).

We have created an environment in which PhD candidates can flourish. We expect supervisors (at least two) to be closely involved and co-responsible for a project. First-time supervisors are encouraged to get training on supervising PhDs. In addition to the supervisors, SBE has two doctoral directors — one focused on TI PhDs and one on ABRI PhDs — who monitor and support PhD candidates. They meet at least once a year with PhD candidates, are available for counselling, offer supervisors advice on selection and go/no-go decisions, and work with PhD candidates and supervisors to create effective Training and Supervision Plans with up-to-date, feasible work plans for each PhD trajectory. The doctoral directors also co-organize workshops for PhD candidates on managing a PhD project and an academic career, empowering them to navigate the uncertainties, setbacks and diverging expectations that are inherent to the research process. PhD candidates are represented in the SBE PhD council, which has proven to be a valuable lynchpin between the PhD community and the Faculty Board – for instance, when dealing with consequences of the COVID-19 crisis.

2.2.6.2. PhD training for Economics, Econometrics and Finance: Tinbergen Institute

Context, supervision and quality assurance of PhD programs and PhD research

Tinbergen Institute (TI) is the graduate school and research institute operated jointly by the Schools of Economics and Econometrics of Erasmus University Rotterdam (EUR), University of Amsterdam (UvA) and Vrije Universiteit Amsterdam (VU). Founded in 1987, TI is today one of the major economic research institutes in the Netherlands, with more than 150 research fellows, over 200 PhD and research master's students and over 750 PhD alumni. Tinbergen Institute is named after Professor Jan Tinbergen, the Dutch Nobel Prize laureate in Economics (1969). TI has offices in both Amsterdam and Rotterdam.

The three partner schools have largely delegated recruiting, selecting and training of the future PhD students to Tinbergen Institute. TI annually selects 25-30 students from over 300 applicants. The generous scholarship program and the availability of PhD positions in the faculties for postgrads allow Tinbergen Institute to compete successfully on the international market for talented and ambitious PhD students in economics. The collaboration within Tinbergen Institute creates economies of scale in setting up and maintaining a selective and competitive research master's program. The best researchers from the three partner schools are appointed as TI research fellows. TI fellows organize and govern the graduate program, teach the courses and organize and participate in the institute's research seminars and conferences. All TI fellows are, moreover, available as (PhD) thesis advisors.

The program offers a wide array of field courses and students will find that supervision is available in almost every field within economics. The two-year course program is recognized as a distinct research Master's or MPhil program, and has been accredited as such by the Dutch-Flemish Accreditation Organization (NVAO). The typical MPhil graduate will subsequently receive a three-year appointment at one of the participating faculties as a PhD candidate.

Alternatively, with a one-year MSc degree, students can receive a four-year appointment as PhD candidate, in which case they take a selection of courses from TI's two-year MPhil program, mostly in their first year, to prepare for their dissertation project. At present, at least 30 ECTS of post-graduate course work must be completed before candidates are eligible to defend their thesis.

Selection and admission procedures

PhD candidates from the MPhil program at Tinbergen Institute. In their second year, MPhil students at TI are matched with a supervisor from one of the participating schools who will oversee their MPhil thesis. MPhil students usually intend to do their PhD with the same supervisor. Every year, SBE appoints at least five PhD candidates in economics (including econometrics and finance). If more than five MPhil students apply for a PhD position at SBE, the School will try to find external funding. If sufficient external funding cannot be found, MPhil students will be selected on the basis of their grades and a well-balanced division among the four departments. These PhD students are usually given a three-year contract.

PhD candidates working on externally funded projects. Other potential PhD candidates can apply for externally funded projects (NWO, EU or contract research) that are advertised on the website. The PhD candidates are selected by their future supervisors, who can solicit advice from the SBE doctoral director for TI PhD candidates. There are several admissions requirements. First of all, candidates must have completed a master's program and must have received excellent results in their first degree/graduate study. Secondly, candidates must have an explicit interest in and motivation for scientific research. These PhD students usually receive a four-year contract.

External or part-time PhD candidates. These students can apply throughout the year with a short proposal. Applicants who wish to participate in this program should have an

Tinbergen Institute remains strongly convinced of the importance of **guiding its PhD candidates to the job market**

MSc or an equivalent degree obtained from an institution of recognized standing, and a commitment to devote at least sufficient hours per week to research and course work. These PhD candidates pay a fee of 5,000 euro for the whole trajectory and are not employed by SBE.

Internal supervision of PhD candidates and guidance to labour market

TI PhD candidates are supervised by at least two supervisors at SBE, most of whom are TI fellows. At the beginning of the PhD trajectory, a training and supervision plan is put together by the supervisors and the PhD candidate. After one year of employment, the supervisors evaluate the PhD candidate's performance, using a university-wide HRM review instrument that considers aspects such as supervisor-employee match, the atmosphere at work, and working conditions. That evaluation leads to a prospective agreement on quality and performance of future work. In the event of a positive evaluation, the contract will be extended for the remaining two or three years. An annual review will take place each subsequent year.

TI organizes job market training for all TI-affiliated PhD students. TI has a placement director who has stepped up the institute's efforts in the realm of job market preparation. TI offers a number of services: a series of workshops, mock interview sessions that actively involve TI fellows, and an alumni event to assist PhD students in successfully preparing for the academic job market. TI has made travel budgets available to attend job market meetings in the United States and Europe. These job market efforts have had a great impact, which has become clear from the high quality of placements, growing participation by TI PhD students and increased interest from employers both inside and outside academia. TI remains strongly convinced of the importance of guiding its PhD candidates to the job market. Advantageous PhD student placements are not only beneficial for the students, they reflect positively on TI and all three schools — a good placement record will attract more and better students to the TI MPhil program.

2.2.6.3. PhD program for Business: Amsterdam Business Research Institute

AMSTERDAM BUSINESS RESEARCH INSTITUTE

Context, supervision and quality assurance of PhD programs and PhD research

The Amsterdam Business Research Institute (ABRI) was founded in 2009. ABRI's mission is to promote excellence in knowledge creation and dissemination in business and organization studies across academic and business communities. Its location close to Amsterdam's Zuidas business district helps the institute to play a strategic societal role linking academia, business and the local community together. This link is important if we are to see more sustainable and responsible business in the future. ABRI's activities concern two areas: a research institute and doctoral education.

ABRI aims to enable promising students who want to pursue an academic career in business studies and become part of the next generation of top researchers. To accomplish this mission, ABRI has developed a coherent set of courses, workshops and training events that allow SBE to recruit, train and place PhD candidates of promise in their fields. PhD education has been offered in the form of a research master's degree, 'Business in Society' (a joint degree program with UvA), as well as a standalone PhD curriculum for students who already have a master's degree in business. Despite its great achievements, ABRI recently decided to further develop its approach towards doctoral education.

Specifically, ABRI has been transitioning from a research master's program followed by a three-year PhD trajectory to an integral, four-year PhD program, combining structured coursework with a dissertation phase. This allows better coverage of the needs of the very diverse sub-fields represented in ABRI and makes it easier to recruit PhD candidates from our regular master's programs. In addition, a four-year PhD trajectory makes ABRI more attractive in the increasingly international market for PhD education, where a research master's is less common.

The new ABRI PhD program provides well-rounded knowledge and skills development for all PhD candidates, regardless of their degree (research master's or regular master's), specialization or source of funding. Each of the six ABRI research tracks (Accounting & Financial Management, Digital Innovation & Transformation, Marketing, Operations Analytics, Organizational Behavior & HRM and Strategy & Entrepreneurship) has developed a structured curriculum drawing from a shared portfolio of courses, in combination with courses offered by other graduate schools and national training networks. The curriculum of each ABRI track includes courses on academic foundations, theory/field courses and methods courses. Each PhD candidate needs to receive at least 30 ECTS of training; however, ABRI tracks may specify a curriculum exceeding 30 ECTS. The coherent design principles and set of shared courses ensures that all PhD candidates share a common knowledge and skills base, while specialized theories and methods courses provide the expertise they need to become leading scholars in their fields. In addition to formal course work, PhD candidates are required to be active members of their research communities by regularly participating in research seminars and giving presentations at international academic conferences. Moreover, ABRI encourages the development of teaching skills; it offers a teaching qualification training program specifically designed for PhD candidates.

In addition to its PhD program, ABRI has also developed a new Pre-PhD Research Training Program. This program provides an opportunity for talented students graduating from regular master's programs to explore opportunities for an academic career. They will be able to earn a minimum of 21 ECTS at PhD level, while also getting the chance to work on a research project together with an ABRI fellow and as a teaching and/or research assistant in an ABRI-affiliated department. The objective of this program is to prepare MSc graduates for an ABRI PhD position.

Selection and admission procedures

PhD candidates funded by the faculty. Every year, SBE funds five ABRI PhD positions in business. These candidates are recruited annually on the basis of an open competition. Candidates are eligible if they have completed an accredited research master's (such as ABRI's research master's BIS or the Business Data Science research master's) or a regular master's program (preferably in combination with the Pre-PhD Research Training Program). Candidates must submit their own research proposals. The five best proposals are selected by the ABRI Board; these PhD candidates will be employed for three years in case of a research master's degree or four years in case of a regular master's degree.

PhD candidates working on externally funded projects. These PhD candidates apply for externally funded projects (NWO, EU or contract research) advertised on the ABRI website. The PhD candidates are selected by their future supervisors, who can solicit advice from the ABRI doctoral director. A key requirement is that candidates must have completed a master's programme and must have received excellent results in their first degree/graduate study (average >7.5). Further, candidates must have an explicit interest in and motivation for scientific research. These PhD candidates usually receive a four-year contract.

External or part-time PhD students. These candidates are annually recruited for the part-time ABRI Executive PhD program or for an individual PhD trajectory. Applicants wishing to participate in the Executive PhD program should have an MSc or equivalent degree obtained from an institution of recognized standing, and a commitment to devote at least 15 hours per week to research and coursework. These PhD candidates are not employed by the School.

ABRI Executive PhD Program

In 2014, ABRI launched the Executive PhD program: a four year, structured PhD training program that equips professionals and executives with the knowledge and tools to conduct high-impact academic research. Although the program targets an executive audience, it is not practically oriented like a DBA or MBA programme. It shares the same rigour and objectives as ABRI's renowned full-time PhD program, the only differences being that the classroom consists of executives and the training offered is on a part-time schedule with more structure and guidance. Today, our community comprises over 70 participants, of which many are international. Executives' long-term work experience allows them to identify unique topics that drive their scholarly investigations; executive PhDs appear well positioned to make theoretical contributions. Executives' scientific research helps them professionalize and advance their professional domains and also innovate within their organisations. Indeed, some of our Executive PhD candidates have become influential speakers in their areas of expertise while others have switched careers and became academics. Several of these executive PhDs have already published their work in top scientific journals.

Internal supervision of PhD candidates and guidance of PhDs to labour market

Throughout the PhD trajectory, ABRI consistently monitors the progress of its students to ensure their steady development and avoid delays and dropouts. At the start of the PhD trajectory, candidates and supervisors develop a training and supervision plan (TSP) that is discussed with the ABRI doctoral director. The TSP will be updated every year as part of the annual assessment process. After nine months, PhD candidates have to submit a research proposal that will be reviewed and discussed in a meeting with the supervisory team and the ABRI doctoral director. Based on candidate's performance during the first year, the supervisory team in consultation with the ABRI doctoral director will make a go/no go decision. If there are serious doubts concerning a candidate's ability to complete the PhD within a reasonable time, a decision will be made to terminate the PhD trajectory. In addition to these formal milestones, the ABRI PhD program entails regular face-to-face meetings of the doctoral director and each PhD candidate, student self-reflection reports, supervisor recommendations and an annual PhD survey.

To equip PhD candidates with knowledge and skills for a job in academia, the ABRI PhD program entails a series of mandatory workshops on "How to build an academic career." Throughout their trajectory, PhD candidates learn how to structure and manage their research pipeline, how to engage in academic networking, understand and contribute to the publication process, and prepare for the academic job market. ABRI offers excellent job placement prospects, since the extensive international networks of ABRI's research fellows and PhD supervisors can provide PhD candidates with placements in leading national and international academic and private institutions. Moreover, ABRI facilitates and encourages PhD students to spend some time abroad, so they may build a wider network and find academic jobs more easily. Furthermore, the SBE career office organizes dedicated courses and workshops that prepare PhD candidates for the job market.

2.2.6.4. Research Master's Business Data Science (BDS): Bridging business and economics

In 2019, the three schools that participate in TI launched a new research master's in Business Data Science. This program bridges business and economics, and has a strong focus on data science (mathematics, statistics, and econometrics) presented to the students at a higher theoretical level than in a traditional master's program.

The availability of big data generated by a growing range of interconnected, interactive, interoperable devices and the concurrent development of powerful quantitative techniques has given rise to new perspectives and paradigms in the field of business and economics. To leverage these opportunities, there is an increasing demand for highly trained specialists who can extract insights from these massive datasets to solve business-related problems. BDS courses tie the

foundations of data science directly to different business and economics fields.

The BDS program is a two-year research master's (120 EC) aiming to train future PhD students who will start their doctorate at one of the three partner universities' schools of business and economics. The program helps students jumpstart their PhD trajectory not only from solid training, but also from the direct experience in research (e.g., through seminars, research clinics, research hackathons, skills workshops, thesis development, interaction with faculty, research assistant opportunities, and so on) and teaching (e.g., teaching assistantship opportunities). Students who successfully complete the research master's in Business Data Science are assisted in finding PhD positions at one of the three partner universities.

Admissions are highly selective and competitive. A maximum of 30 students is annually admitted to the BDS Research Master's program. Capping the number of students at 30 guarantees a high level of interaction in the classroom, detailed feedback from faculty and the support of a strong cohort. In year 2, students focus on one of five business subdisciplines: finance, entrepreneurship and innovation, marketing science, human resources and organization, or logistics and supply chain analytics. Courses have been carefully selected by a team of experts with the aim of ensuring the perfect learning trajectory in each subfield. Students who complete the program can apply for an ABRI PhD position or work with an SBE supervisor on an externally funded PhD position.

3. Evidence and accomplishments over the past six years

3.1. Scientific impact and research quality

Top publications

We value quality and aim to publish our research in top academic journals observing the highest criteria for rigor and novelty. Therefore, a key indicator is the number of journal publications with AIP > 0.80. This refers to articles published in journals that are among the top 20 % on Web of Science in terms of average weighted influence in citation networks over a five-year period.

Figures 4 and 5 show that the number of top publications (AIP > .80) has grown significantly. In business, the number of top publications grew spectacularly from 2008 to 2020, on average more than doubling in the 2015-2020 period compared to the previous evaluation period (from 25 to 69, on average, per year). In economics, the number of top publications has also almost doubled (from 53 to 91, on average, per year). Both upward trends also hold when corrected for research time available (in FTEs; see Table 6 in appendix). Moreover, Figures 6 and 7 show that publications in business and economics are skewed towards the absolute top.

Figure 4: Business Publications AIP > 0.80

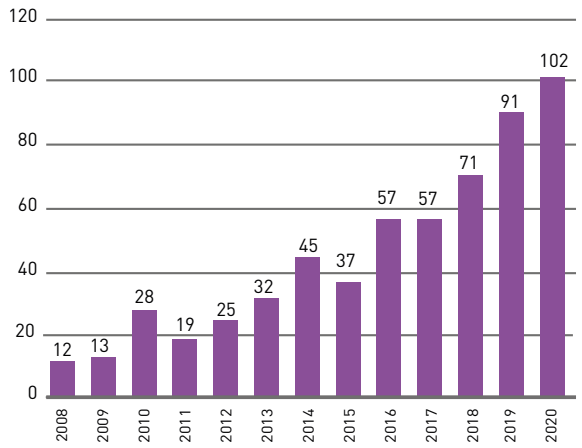


Figure 5: Economics Publications AIP > 0.80

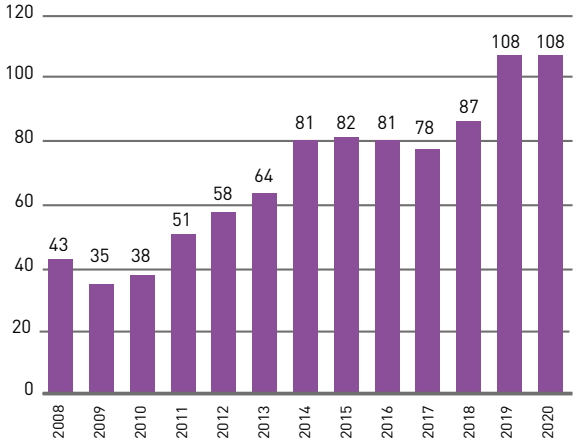


Figure 6: Business - Publications per AIP category

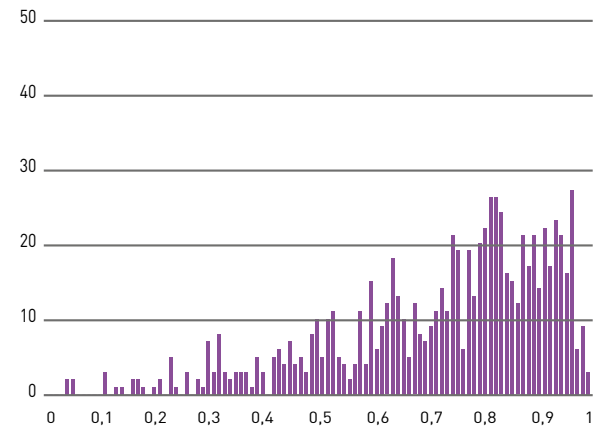
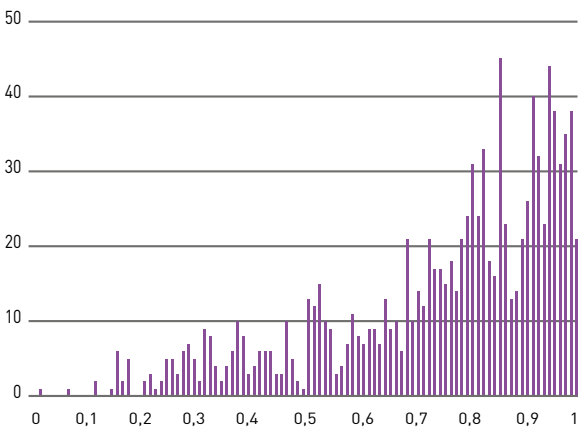


Figure 7: Economics - Publications per AIP category



Publication and Citation Analysis

In June 2021, CWTS analyzed the publications and citation impact of SBE in comparison to other Dutch schools of business and economics (covering the years 2014-2018). Among the seven institutes participating in this benchmark, SBE had most Web of Science publications, and ranked second in overall citation impact.

Table A: Top business journals with SBE editorial board member
Academy of Management Journal (de Jong, Stam)
Academy of Management Review (Berends)
Accounting, Organizations and Society (Dekker)
Accounting Review (Gold, associate editor)
Contemporary Accounting Research (Dekker)
Entrepreneurship Theory and Practice (Stam, associate editor, van Gelderen, van Burg)
Human Relations (Van den Hooff, Porter, Khapova)
International Journal of Research in Marketing (Frambach, Verlegh, Horen)
Journal of the Academy of Marketing Science (Sotgiu)
Journal of the Association for Information Systems (Huysman)
Journal of Consumer Research (Verlegh)
Journal of Interactive Marketing (Kleijnen)
Journal of International Business Studies (van Witteloostuijn, associate editor)
Journal of Management Studies (Wickert, associate editor; Elfring, Porter, Stam, Sieweke)
Journal of Marketing (Grinstein)
Journal of Retailing (Sotgiu)
Journal of Service Research (Kleijnen)
Journal of Organizational Behavior (Solinger)
Long Range Planning (Berends, Khanagha)
Operations Research (Heidergott, associate editor)
Organizational Psychology Review (Tims, associate editor)
Organization Studies (Heusinkveld, Wickert, Porter)
Strategic Organization (Berends)
Technovation (Tuertscher, associate editor; Berends)

Editorships

Furthermore, the quality and reputation of our researchers is reflected by (associate) editorships and memberships of top journals' editorial boards, as well as by the frequent invitations they receive to act as guest editors for journal special issues. The tables below list top journals (AIP > 0.80) with SBE researchers serving as (associate) editor or editorial board member.

Table B: Top economics journals with SBE editorial board member
European Economic Review (Withagen, Brugemann)
Journal of Applied Econometrics (Koopman, Van der Klaauw)
Journal of Banking and Finance (Seeger)
Journal of Business and Economic Statistics (Koopman)
Journal of Econometrics (Van den Bergh)
Journal of Economic Behavior and Organization (Van den Assem, associate editor; Zwinkels,)
Journal of Environmental Economics and Management (Van der Ploeg, Withagen)
Journal of Financial Econometrics (Lucas, associate editor)
Journal of Health Economics (Lindeboom, editor)
Journal of Industrial Economics (Moraga Gonzalez, associate editor),
Journal of Urban Economics (Verhoef, Van Ommeren)
Industrial and Corporate Change (Bartelsman)
International Economic Review (Van den Bergh)
International Journal of Industrial Organization (Moraga Gonzalez, co-editor)
Labour Economics (Van der Klaauw)

Awards

Excellence in research is also reflected by scientific awards and prizes accorded to researchers. SBE researchers have received a significant number of awards over the last six years, including many best paper (68) and best reviewer awards (21). Some awards and signs of academic recognition are highlighted below.

Business

Arjen van Witteloostuijn was elected Fellow of the Academy of International Business (AIB) in 2019. The AIB Fellows consist of a select group of distinguished AIB members recognized for their outstanding contributions to the scholarly development of the field of international business or have made significant contributions to the AIB. Van Witteloostuijn is also member of the prestigious Royal Netherlands Academy of Sciences (Koninklijke Nederlandse Academie van Wetenschappen, or KNAW).

Marleen Huysman was selected in 2017 as one of the leaders of the Association of Universities in the Netherlands (VSNU) Digital Society Program, leading the Work and Organizations Group to support the Netherlands to develop technologies and applications that serve societal goals and interests.

In 2019, Femke van Horen received an award — one of several best paper awards won by SBE researchers — for best paper in Consumer Research in Practice, issued by the AMA Consumer Behavior SIG (CBSIG). The award recognises scholarly research articles that contribute significantly to marketing practice. The 2019 award was based on articles that appeared in a refereed journal, including *Journal of Marketing*, *Journal of Marketing Research*, *Journal of Consumer Research*, *Journal of the Association for Consumer Research*, and *Journal of Consumer Psychology*.

Economics

In 2020, nine SBE economists appeared in the Dutch Economist Top 40; Albert Menkveld (Finance) was overall number 1, and six SBE researchers were included in the top 15. The Economist Top 40 is a list of the best publishing economists in the Netherlands. The list is based on peer-reviewed articles published between January 2015 and December 2019. The Economist Top 40 is published annually in the Economisch Statistische Berichten.

Siem Jan Koopman (Econometrics & Data Science) was appointed as 2019-2020 Laureate of the prestigious Francqui Chair at the Faculty of Business and Economics, University of Antwerp, Belgium. Every year, the Francqui Foundation invites Belgian or European scientists to visit Belgian universities, offering eminent researchers and scholars a chance to teach a series of guest lectures at the host university and participate in the scientific life of the institution.

In 2017, Geert Mesters (Econometrics) received the Christiaan Huygens science award for his PhD thesis *Essays on Nonlinear Panel Time Series Models*. The award is awarded annually by the Royal Netherlands Academy of Sciences (KNAW) to a researcher who has made an innovative contribution to science.

3.2. Societal impact

Communication about research

SBE researchers impact society by publishing in practitioner-oriented outlets such as professional journals and newspapers, but also with other types of media exposure, tweets and podcasts. We use Altmetric to indicate the attention for our research. Altmetric data track the influence of research on public debate and policy. Over the 2015-2020 period, Altmetric identified 1,211 SBE publications that received attention, which had in total 22,963 mentions; 20,799 mentions were on social media, 1,822 mentions in news and blogs, 253 mentions in policy documents and 89 in other sources (including Wikipedia, videos and Q&A posts).

Business

Researchers of the different business departments publish frequently in professional journals such as *Holland Management Review*, *Public Controlling*, *Management Control* and *Accounting*. In addition, members of the research group publish on a regular basis in Dutch newspapers and journals such as *Het Financieele Dagblad*, *Intermediair*, *Personeelsbeleid*, *Loopbaanvisie*, and *FD Outlook*. They also participate in the SSH COVID-19 portal, which aims to consolidate and organize SSH expertise across Dutch universities on a publicly available national portal, ensuring fast and direct access to academic experts. The most cited researcher in Dutch newspapers is Raymond Gradus (Accounting) with his research on recycling and waste policy.

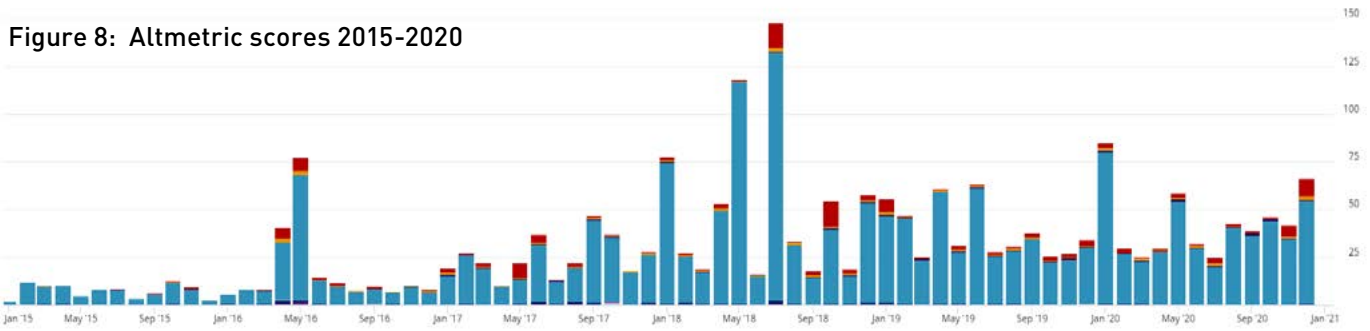
An example of a paper with a high Altmetric score (153) is 'Out of the Panopticon and into Exile: Visibility and control in distributed new culture organizations', by Ella Hafermalz (KIN) (2020), in *Organization Studies*. This paper has had a lot of attention in the media and news outlets (e.g. BBC News) because many employees are working from home because of the COVID-19 pandemic. Home workers would rather be observed from a distance by their employer than ignored or forgotten. This is evident from this research into digital innovation in the workplace. 'We are used to looking at Big Brother-like practices from a negative perspective, but they can make a positive contribution in the workplace.'

Economics

The work of the SBE economics researchers is disseminated in Dutch policy-oriented journals such as *Economisch Statistische Berichten*, *TPEDigitaal*, and *Tijdschrift Vervoerswetenschap*, and in web-based discussion forums such as VoxEU or Me Judice. Some work by economics researchers has been picked up by the Dutch press (e.g. *NRC Handelsblad*, *Het Financieele Dagblad*, and *Trouw*) and also by the international press (e.g. *The Economist*, the *Financial Times*, the *Wall Street Journal*, and the *New York Times*). Moreover, their work has been cited by top domestic policymakers (e.g. the Dutch Cabinet, DNB and CPB) and by top leaders of international policy organisations (e.g. the Federal Reserve Board, ECB, OECD, European Commission, World Bank and IMF). The most cited economics researcher in the Dutch media is Erik Verhoef (Spatial Economics) with his research on congestion pricing.

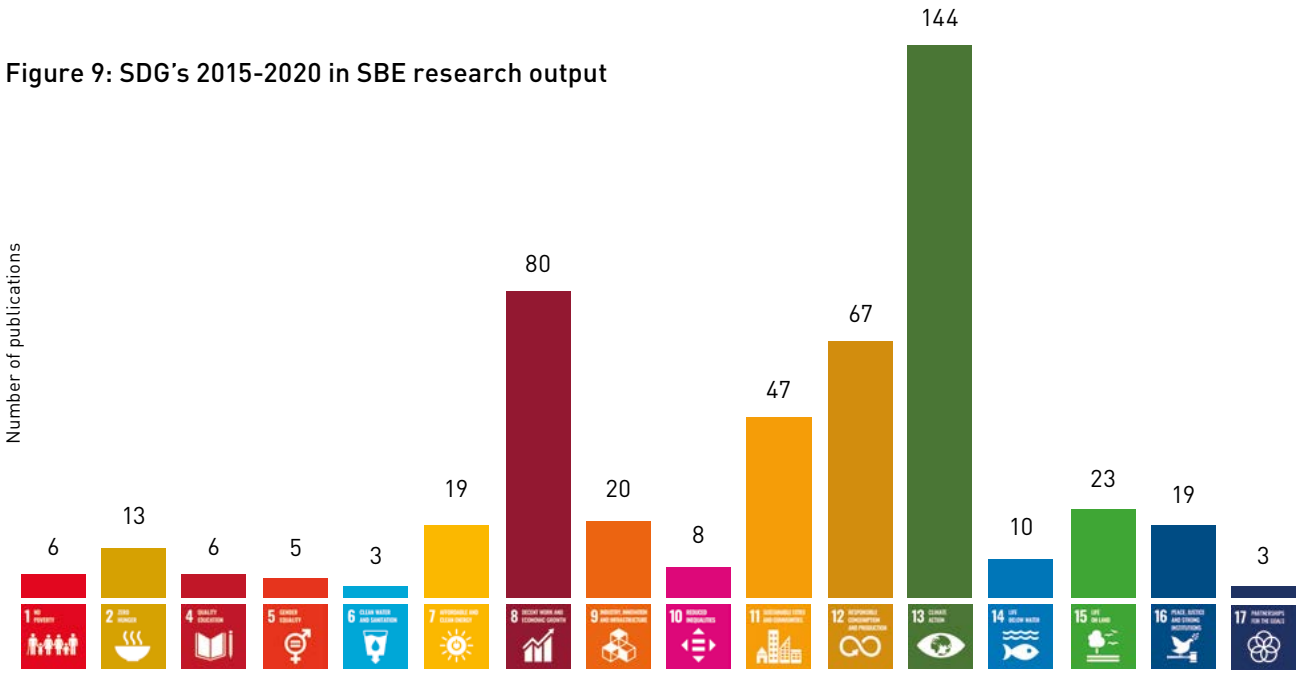
An example of a paper with a high Altmetric score (308) is "Street Prostitution Zones and Crime" by Paul Bisschop, Stephen Kastoryano, and Bas van der Klaauw (Economics) (2017), and published in the *American Economic Journal: Economic Policy*. The paper attracted much attention in the media and news outlets and has been cited in a policy report of the American Civil Liberties Union. The empirical results of the paper show that opening a street prostitution zone reduces sexual abuse and rape. These results are mainly driven by a 30–40 percent reduction in the first two years after opening the street prostitution zone.

Figure 8: Altmetric scores 2015-2020



The societal relevance of our research can also be illustrated by linking research output to the Sustainable Development Goals (SDGs). The 17 SDGs are the blueprint to achieve a better and more sustainable future for all. The Vrije Universiteit Amsterdam has made the SDGs an essential part of its policy for the present and near future. Figure 9 shows the relative degree to which publications from the evaluation period (2015-2020) connect to each of the SDGs. Our research most frequently addresses the following SDGs: Climate Action, Decent Work and Economic Growth, Responsible Consumption and Production, and Sustainable Cities and Communities.

Figure 9: SDG's 2015-2020 in SBE research output



Structural collaboration with partners

A second path for achieving societal impact is collaborating with societal partners, such as research projects with companies and for governmental organizations.

Business

Researchers from the business departments collaborate on a structural basis with companies and governmental organizations to perform contract research and other forms of collaboration. This often concerns PhD projects, and sometimes shorter projects executed by researchers and postdocs. An example of a research project financed by industry is Kathrin Borner's PhD project, supervised by Berends, Feldberg and Deken, and financed by Bosch-Siemens Home Appliances. The project ("Organizing for digital innovation") investigates the transformation of a product-centered company into a data-driven, ecosystem-oriented organization.

Structural research collaboration is also combined with executive education at the Zuidas. The in-company leadership development program "Leading for Better" at ABN AMRO Bank is a multi-year leadership strategy acceleration program aimed at fostering the leadership capabilities of the top 450 global leaders at ABN AMRO. As part of the program, a formalized research collaboration between the M&O department and ABN AMRO was forged, including multiple waves of a survey to collect data on changes in leadership behaviour, strategic renewal behaviour and the impact of organizational attributes on change. These data will also be combined with internal ABN AMRO data, including talent development and employee engagement data.

The societal impact of our work is strengthened on a more structural basis through research centres and institutes. These include the KIN Center for Digital Innovation, which initiates collaborative research, executive education, and master classes on topics such as data & analytics, digital innovation processes and the impact of artificial intelligence on work; the Amsterdam Research Center in Accounting (ARCA); the Center for Entrepreneurship @ Vrije Universiteit Amsterdam (CfE@VU), which assists entrepreneurial minded students; the Amsterdam Center for Business Analytics (ACBA) and the Servant-Leadership Centre for Research and Education (SERVUS).

Economics

Researchers from the economics departments have long-standing collaborations with ministries and other governmental organizations, and also with companies. These include funded PhD projects as well as shorter projects. Collaborating with societal partners is essential for the use of research products by societal groups.
A salient example of contract research is Roger Prudon's PhD project, supervised by Koning and Muller and financed by the Institute Gak, where they are analyzing the effects of disability for work reforms. The Institute Gak contributes to the quality of social security and the labor market in the Netherlands by investing in social projects, research and chairs.

Another example is the "Smart Incentives for Managing Traffic Externalities" project at the spatial economics department where experiments have been carried out in collaboration with societal partners involving externally funded PhD and postdoc researchers.
The societal impact of our work is strengthened on a more structural basis through collaboration with research centres and institutes such as the Amsterdam Centre for World Food Studies (ACWFS). The ACWFS is an interdisciplinary institute at the VU which conducts research in collaboration with societal stakeholders and end users to enhance food & nutrition security by identifying policies and strategies that are economically, socially and environmentally sustainable and responsible, and which improve quality of life. Another research centre is the Spatial Information laboratory (SPINlab), hosted by SBE, which is the centre for research and education in Geo-Information Science. The lab enables cooperation with research institutes worldwide (e.g. World Bank, EC-JRC, PBL, Rijkswaterstaat, Dutch municipalities) in projects that support spatial (aspects of) policy making. An example includes the evaluation of the spatial economic impacts of the new Noord/Zuid metroline in Amsterdam. This study combined advanced spatial data analysis with innovative economic analysis to unravel how urban density and real estate prices were affected by improved accessibility.

Marks of recognition by societal groups

The third path of societal impact includes membership in civil society advisory bodies and appointments of professors paid by societal groups.

Business

In the business departments we have three endowed professors who have an important link with industry or society. One of the endowed professors is Mario van Vliet, who has a chair in Information and Technology Management and is financed by Deloitte. Besides having a chair at the VU, Mario is global consulting COO at Deloitte and he is board room consultant for top-tier Dutch and international industry members. Van Vliet's chair enables SBE to collaborate with Deloitte on research projects examining digital transformation.

Furthermore, researchers act as members or consultants for different societal organizations including MOA (Expertise Center for Marketing Insights, Research and Analytics) (van Herk), the Ministry of Internal Affairs (Gradus), Me Judice, a platform for Dutch economists (Koedijk), and Dutch parliament's House of Representatives (van Witteloostuijn).
Researchers are also involved in Corona related platforms. For example, Marleen Huysman (KIN) is member of the 'Online Society' knowledge platform — in the Home Working domain — run by the Ministry of Social Affairs and Employment.

Economics

The economics departments host seven endowed professors. One of the endowed professors is Pierre Koning (economics department) who is funded by the Institute Gak. This chair is important for bridging the gap between the academic and societal world and to collaborate closely with those institutes in for example PhD projects. Currently, two PhD candidates at SBE are working on research projects financed by the Institute Gak and with access to data at the Institute Gak.

Furthermore, economics researchers act as members or consultants for nearly all the ministries and for different societal organizations like the CPB (Netherlands Bureau for Economic Policy Analysis), Unilever, pension funds, AkzoNobel, Tony's Chocolonely and Wolters Kluwer.

Particularly prestigious and influential is Maarten Lindeboom's Crown Member status in the SER (Social and Economic Council of the Netherlands) and Henri de Groot's status as deputy Crown Member. The SER is an advisory body in which employers, employees and independent experts (Crown-appointed members) work together to reach agreement on key social and economic issues. Erik Verhoef is member of the Council for the Environment and Infrastructure, the primary strategic advisory board for the Dutch government and parliament in matters relating to the physical environment and infrastructure.

3.3. Open science and research integrity

Open access publications

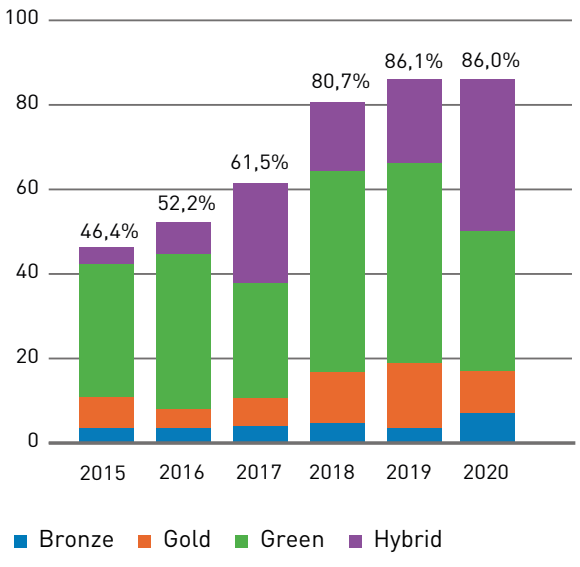
In the last few years, we have vastly increased the number of publications that are available open access. With 86% of all journal publications published in 2019 available open access, we are indeed getting close to our ambitions. For journal articles with SBE corresponding authors, we reached 97% open access in 2019.

Open research practices

SBE researchers have spearheaded and participated in several initiatives with regard to open data platforms and open research practices. One of the examples is Geoplaza, a platform for all matters related to digital spatial data and Geographic Information Systems (GIS) at VU Amsterdam. It provides the necessary network of knowledge and technical digital infrastructure for innovative spatial research.

Another innovative open science initiative is the Finance Crowd Analysis Project (Fincap). Fincap is the first crowd-sourced empirical research project in economics/finance, and is co-organized by Albert Menkveld and Utz Weitzel of the Finance department. More than 100 research teams from around the world will test the same set of hypotheses on the same data to examine the influence of analytical strategies on research outcomes. These teams will work independently and afterwards integrate their work in an academic paper based on their findings.

Figure 10: Open access availability of SBE journal publications (2015-2020)



Since 2018, SBE has been participating in ODISSEI, the Open Data Infrastructure for Social Science and Economic Innovations. Through ODISSEI, researchers have access to large-scale longitudinal data collections as well as innovative and diverse new forms of data. These can be linked to administrative data at Statistics Netherlands (CBS). Last year, Paul Muller of the Economics department received the Microdata Access Grant for his project 'The 30%-rule for expats: Impact on immigration and wages'.

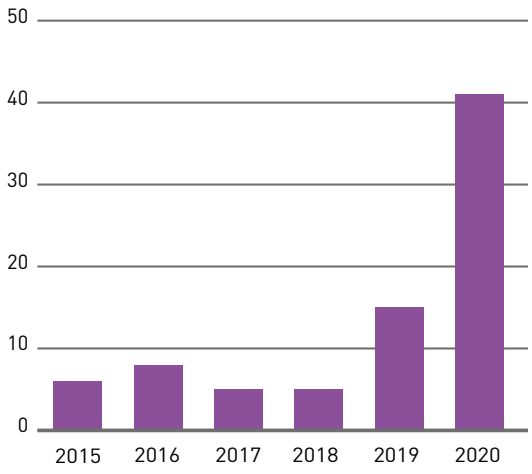
Leadership at SBE has been promoting open research practices broadly. For instance, Arjen van Witteloostuijn has published several editorials on transparency in research e.g., in the Journal of International Business Studies, and Hans Berends has been working to establish a collaboration with DANS and SURF to advance the reuse of qualitative data.

Moreover, Van Witteloostuijn initiated FIRMBACKBONE in collaboration with Utrecht University. FIRMBACKBONE is an organically growing longitudinal data infrastructure with information on Dutch companies for academic research. Once it is ready, it will become available for researchers affiliated with universities in the Netherlands through ODISSEI. It is funded by PDI-SSH, the Digital Infrastructure-Social Sciences and Humanities Platform, for the period 2020-2025.

FAIR data

More and more researchers are making their data openly available, thereby stimulating scientific progress and research integrity, while also increasing citations of their work. Figure 10 shows that an increasing number of datasets are registered in Pure, making data 'Findable', the first step toward making data 'FAIR'.

Figure 11: SBE datasets registered in Pure



Ethics and integrity

To foster an academic culture of research integrity, SBE has taken several actions. Research Data Management policy has been ratified and implemented in the School, and SBE has formed a Research Ethics Review Board (RERB) to assesses research proposals, offer advice and establish research ethics guidelines. The number of proposals assessed by the RERB increased from 6 in 2016 to 18 in 2019. In 2020, an online self-check tool was introduced. It covers the most common forms of research, and was used 50 times in its first year, in addition to 10 regular full ethics review applications. Further, SBE now employs a data steward who gives advice on data management plans, and who has organized courses and seminars on research integrity for researchers and PhD candidates. In 2018, SBE organised a debate on scientific integrity with the 'ConScience App', including a theatre play by Het Acteurgenootschap and a panel discussion. In 2020, we organized a 'Transparency in Research' seminar and a 'How to be a star in GDPR' workshop.

3.4. Attracting and nurturing talent

International recruitment

The number of scientific staff members, including PhD candidates, from outside the Netherlands increased from 21% to 35% over the evaluation period, and the number of nationalities increased from 39 to 43. The impetus to recruit international faculty has grown over the last three years: in 2018, 66% of SBE's appointed faculty was international, in 2019 that number rose to 76%, and in 2020 it reached 79%.

Diversity

With regulations for female researchers in the tenure track system, the Hermine Weijland fellowship and the Fenna Diemer Lindeboom Chair, the number of female associate professors increased from 16% in 2012 to 22% in 2020, and the number of female full professors increased from 5% to 16% during the same period. Also, more female researchers received tenure. Over the last two years, 30 faculty finished their tenure track: 15 female and 15 male. Within this group, 10 women and 9 men received tenure. Thanks to the SBE Diversity Fund, three female researchers have been given extra time to write a research proposal, and fourteen female students have been employed as student assistants of junior researchers, of which eight continued their career in academia as PhD candidates.

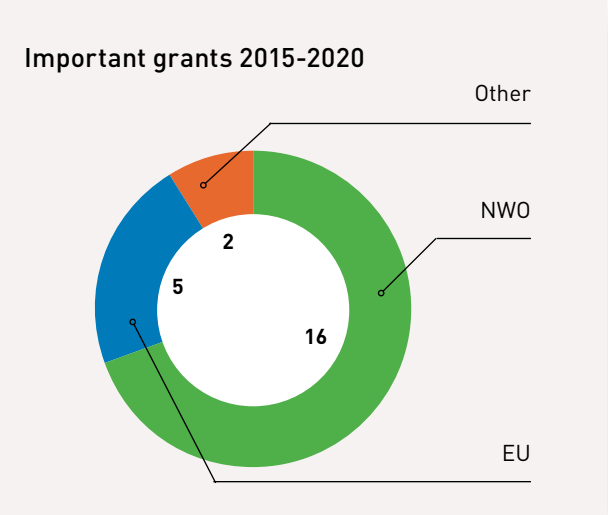
3.5. Acquisition of research funding

SBE researchers have been successful at acquiring external funding. We are especially proud of our research grants from the NWO Talent Scheme: the Veni, Vidi and Vici grants. The Veni grant offers €250,000 to junior PIs (recently increased to €280,000); the Vidi grant is for more experienced researchers with a research team, providing €800,000; and the Vici grant is for senior researchers with a research team, awarding €1,5 million to the successful candidate. We are also proud of other NWO grants, including open competition (PhD) grants, NWO Wotro grants, NWO-Kiem grants, a Top grant, Dinalog grants and, recently, the NWO-ZonMw Covid-19 grants. Furthermore, we have received several Marie Curie Individual fellowship grants, and other Horizon 2020 grants. We present an overview and some highlights below.
A complete list of projects over 100 k€ is provided in Appendix Table 7.

Table C: Internationalization of faculty 2015-2020.

SBE faculty by nationality	September 15				September 17				September 20			
	Dutch		International		Dutch		International		Dutch		International	
PhD student	52%	42	38%	38	57%	43	43%	32	52%	45	48%	42
Lecturer	94%	66	6%	4	95%	63	5%	3	95%	62	5%	3
Researcher	71%	35	29%	14	77%	23	23%	7	59%	19	41%	13
Assistant professor	59%	54	41%	38	51%	47	49%	45	48%	44	52%	48
Associate professor	80%	53	20%	13	77%	49	23%	15	54%	45	46%	38
Full professor	93%	64	7%	5	91%	75	9%	7	86%	76	14%	12
Total SBE	**74%**	**314**	**26%**	**112**	**74%**	**300**	**26%**	**109**	**65%**	**291**	**35%**	**156**

Business



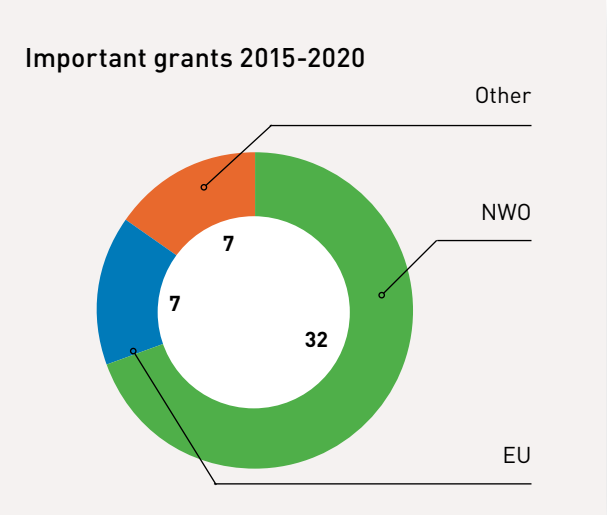
NWO: 16 (2 Veni, 1 open competition, 13 other)
EU: 5 (2 MSCA-ITN, 1 ERC-consolidator, 1 MSCA-RISE, 1 Erasmus+)
Other: 2 (Australian Research Council, Norway Research Council)

In 2015, Maria Tims (Management and Organization department) received a Veni grant for her research proposal with the title "Looking for the "I" in teams while still functioning as a team: Individual job crafting and its relationships with individual, team, and organizational outcomes".

In 2019, Aylin Aydinli (department of Marketing) received a Veni grant for her research with the title "From Cash to Trash: How Price Promotions Impact Food Waste". Marketing is often blamed for generating food waste. Instead of being the cause, marketing can help reduce food waste and thus contribute to a better world. This project investigates the link between price promotions and food waste and identifies ways in which price promotions can stimulate sustainable food consumption.

In 2019, Marleen Huysman (KIN department) received an NWO Open Competition grant for the project 'The impact of AI on knowledge work'. The research follows AI from development in the lab to its use in the workplace to develop a collaborative methodology for augmenting knowledge production. A team of KIN researchers, including two new PhDs and a postdoc, work together to study AI development and its real-world use in organizations. The team will ultimately create a 'collaborative methodology', designed in close collaboration with practitioners who are involved in AI development and AI use.

Economics



NWO: 32 (3 Veni, 5 Vidi, 2 Vici, 4 open competition, 18 other)
EU: 7 (MSCA-IF, Consortium research grant)
Other: 7 (ShareNet International, SURF)/ERA-NET COFUND Smart Cities and Communities, Economic and Social Research Council, IZA/DFID Growth and Labour Markets, Verdus-Surf)

In 2016, Martijn van den Assem (department of Finance) received a Vidi grant for his research with the title "Game Show Economics: Decision Making in High Stakes Natural Experiments".

In 2015, Julia Schaumburg (department of EDS) received a Veni grant for her research with the titel "Econometric methods for assessing non-standard monetary policy impacts". The global financial crisis has triggered monetary interventions and tighter financial regulation. But does the impact of such measures last or does it evaporate quickly? And do they lead to the desired outcomes? These important questions were addressed, using flexible, newly developed econometric methods.

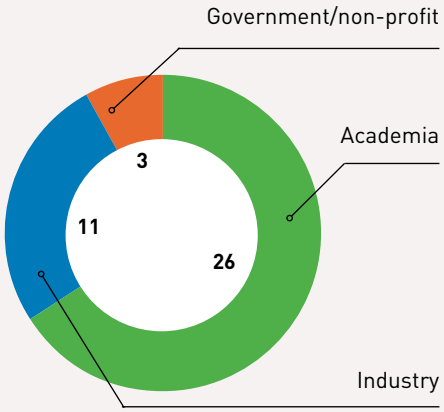
In 2016, Bas van der Klaauw (Economics) received a Vici grant for his research on Improving human capital by allocating individuals efficiently to schools and jobs. The goal of this research is to empirically evaluate the effectiveness of various labour market policies. The results of all the experimental evaluations have been described in policy reports for the Dutch Ministry of Social Affairs, and taken into account in CPB recommendations to policymakers in 'Kansrijk Arbeidsmarktbeleid' ('Promising Labor Market Policy') reports. Finally, results have been presented at meetings organized by the European Union and meetings with policy makers of other countries. The results have also been published in top journals like the *Journal of Public Economics*, *American Economic Journal: Applied Economics*, and *International Economic Review*.

3.6. PhD policy and training

Business

Placements
We are proud of the excellent positions that our business PhDs find after completing their projects at ABRI. Figure 11 shows the distribution of placements across three main sectors (academia, industry and government/non-profit):

Figure 12: Placements of ABRI PhDs (2015-2020)



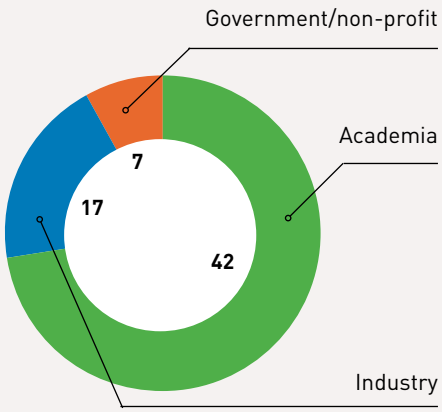
PhD candidates have found positions at top universities outside the Netherlands, including Cambridge University (UK), Cass Business School (UK), University of Aarhus (Denmark), University of Liverpool Management School (UK), Warwick Business School (UK), Universität Hohenheim (Germany), University of Exeter (UK), and the American University of Dubai. In the Netherlands, they have found positions at University of Amsterdam, University of Utrecht, Erasmus University Rotterdam, University of Groningen and University of Leiden. Private and governmental sector employers (and positions) include the Dutch Ministry of Finance, Corbion (supply chain analyst), LifeTec Group, Centrum Wiskunde & Informatica, Netherlands Defense Academy, SEO Amsterdam Economics, Booking.com (data scientist) and Achmea.

Further information on the duration and success rate of the PhD program is given in Table 4a (Appendix).

Economics

Placements
We are proud of the excellent positions that our economics PhDs find after completing their projects at TI. Figure 12 shows the distribution of placements across the three main sectors (academia, industry and government/non-profit):

Figure 13: Placements of TI PhDs (2015-2020)



PhD candidates have found positions at top universities outside the Netherlands, including Yale University, University of Sheffield (UK), Bocconi University (It), University of Gothenburg (Sweden), Pompeu Fabra University (Spain), University of Edinburgh (UK), Université Paris-Dauphine, University of Leicester (UK), University of Vienna, University of Glasgow (UK), University of Technology Sydney (Australia), University of Zurich (Switzerland), Fudan University (China), Norwegian School of Economics (Norway) and Copenhagen Business School (Denmark). In the Netherlands, they have found positions at the University of Groningen, Utrecht University, University of Amsterdam.

Private and governmental sector employers include the European Commission, UBS AG, PwC Netherlands, ING Bank, ABN AMRO Bank, Bank for International Settlements, Independent View B.V., King.com, Amazon, Ecorys, SEO Economisch Onderzoek, Dutch Central Bank (DNB), Federal Reserve Bank of Boston (USA), Overseas Development Office, London (UK).

Further information on the duration and success rate of the PhD program is given in Table 4b (Appendix).

Business

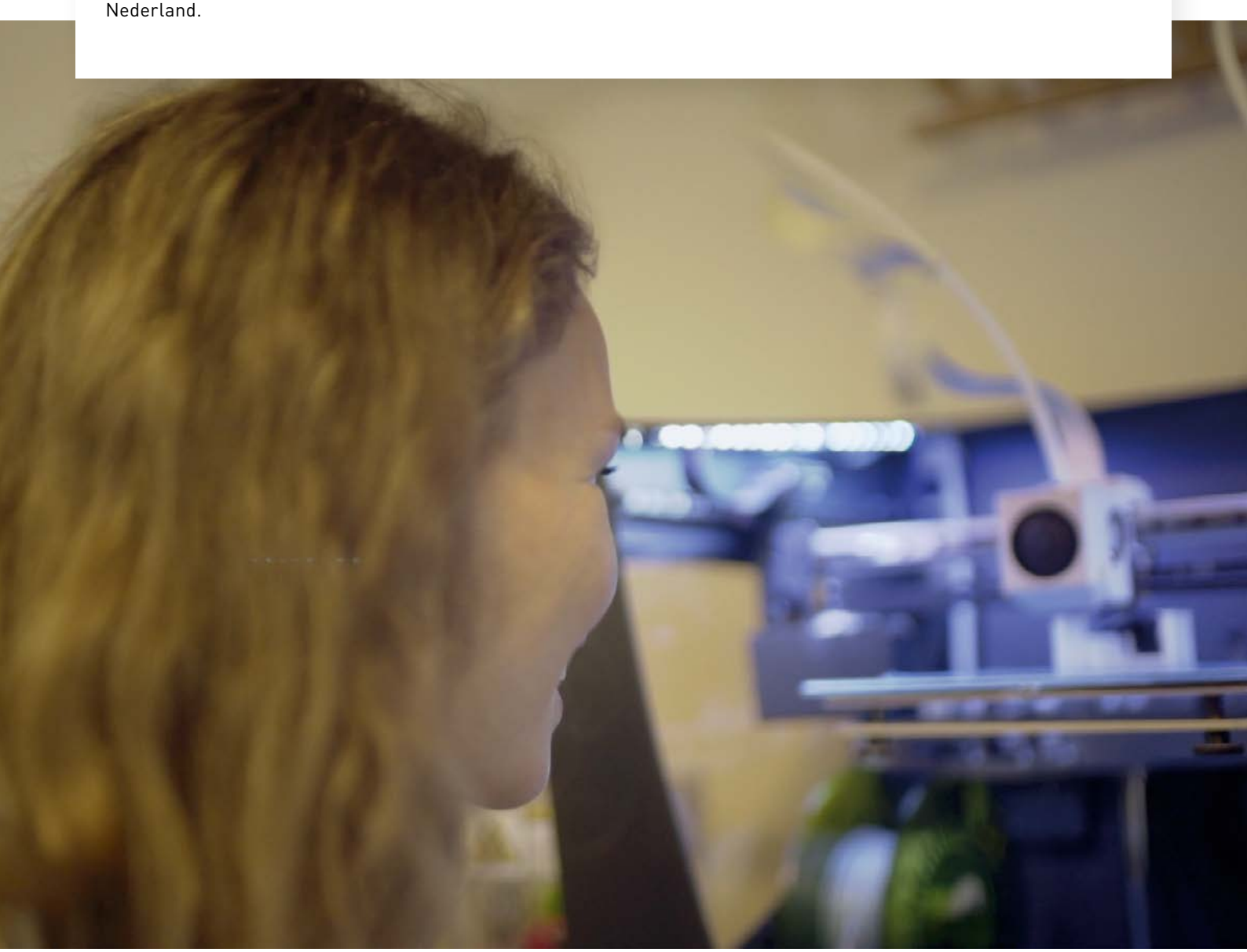
Theses

The quality of the PhD program at ABRI is reflected in the research quality of the produced dissertations of the PhD candidates participating in the program. One of the PhD candidates we are proud of is Maaike Hoogeboom, who graduated in December 2019 with the thesis Optimizing routes with service time window constraints. The thesis was supervised by prof. Wout Dullaert and prof. Bernd Heidergott, and was accepted cum laude by the doctorate board. Six papers born from the dissertation were published in top journals, including Transportation Science. Another example is Anne Kranzbuhler's thesis (supervised by Verlegh and Kleijnen), which won the award for 'best dissertation' in 2018 from the AMA SERVSIG (leading global organization for service researchers), as well an award for 'best essay' by Sourcing Nederland.

Economics

Theses

The quality of the PhD program at TInbergen Institute is reflected in the research quality of the dissertations produced by the PhD candidates. In this report we would like to discuss one of the dissertations which was defended in January 2020. PhD candidate Jurre Thiel wrote his dissertation on Competition, dynamic pricing and advice in frictional markets: Theory and evidence from the Dutch market for mortgages under the supervision of prof. José Moraga Gonzalez and dr. Mauro Mastrogiacomo, and which was accepted cum laude by the doctorate board. For his dissertation, Jurre received the prestigious KVS Medal for best PhD thesis in economics, and his single authored paper was published in the top journal American Economic Journal: Microeconomics.

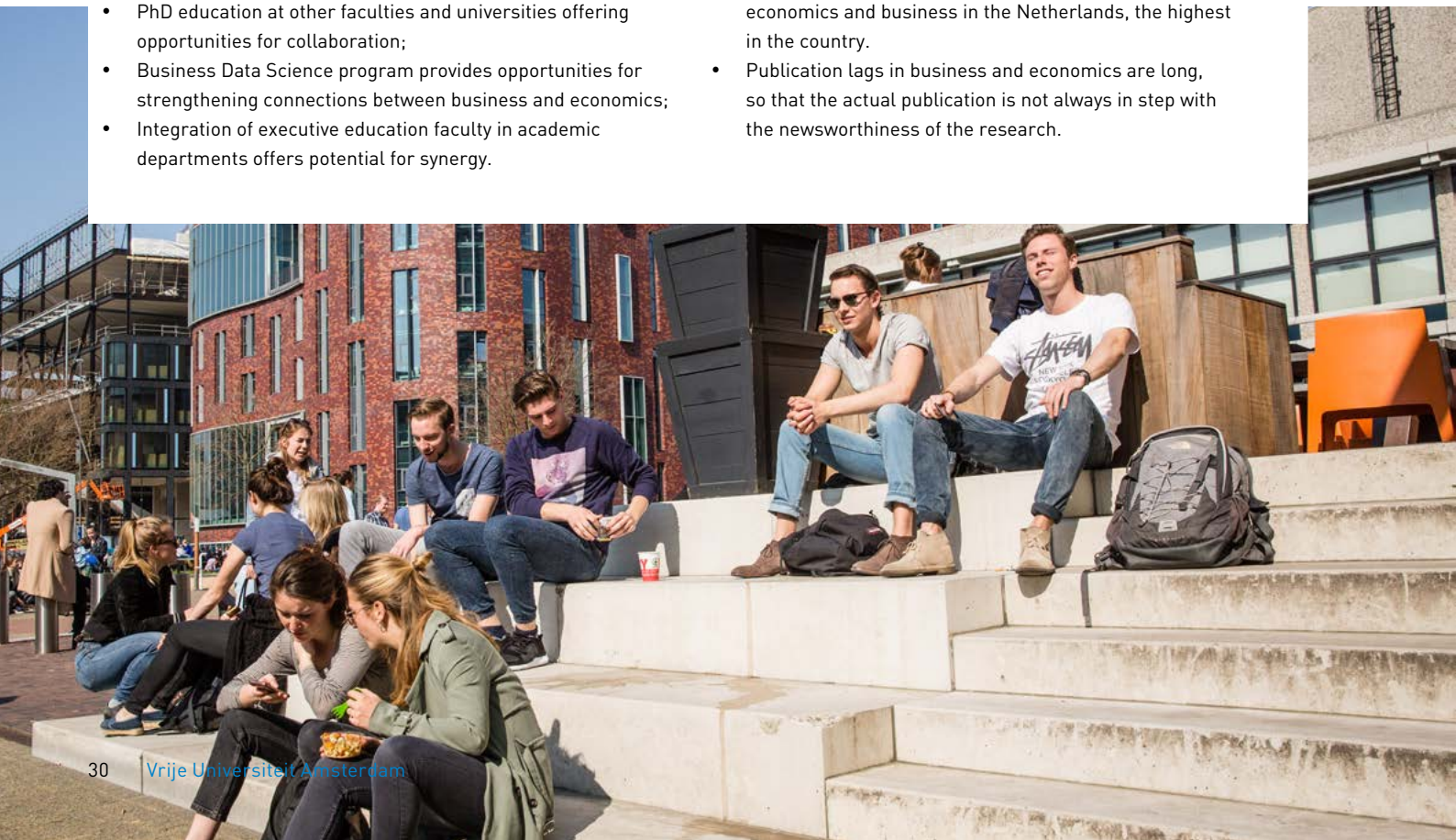


4. Strategy for the next six years

4.1. SWOT analysis

Strenghts	Weaknesses
• Worldwide leading research groups working on topics of scientific and societal importance; • Strong record of publications in top journals across business and economics; • Transparent, attractive, female friendly career development opportunities for tenure-track and tenured faculty members; • Effective policies that favor quality over quantity and give autonomy to researchers; • High quality PhD training in business and economics, and good placement records; • Success in attracting funding from NWO and other external funding sources; • A strong reputation for societal responsibility, which reflects the origin and mission of the Vrije Universiteit; • Attractive location, close to the Zuidas business district (facilitating collaboration), and close to the airport (attractive for visitors).	• SBE's visibility and reputation are still underdeveloped compared to its objective performance (as judged by differences in publication-based rankings and reputation-based rankings); • Difficulty attracting and retaining faculty due to intense competition in the international markets and restrictions in remuneration and secondary benefits; • Although the balance between female and male faculty has improved, women are still underrepresented at higher levels. • International faculty diversity is increasing quickly, but ethnic faculty diversity is lagging behind

Opportunities	Threats
• New Horizon Europe and NWO / NWA calls that emphasize the combination of scientific and societal impact; • Growing student numbers in recent years resulting (with delays) in increased research funds; • Renewal of VU profiling themes (Governance for Society, Connected World, Health, Sustainability) offering opportunities to showcase research; • PhD education at other faculties and universities offering opportunities for collaboration; • Business Data Science program provides opportunities for strengthening connections between business and economics; • Integration of executive education faculty in academic departments offers potential for synergy.	• A steady decline in direct governmental funding for research and teaching, disadvantageous budgeting mechanisms at the VU and relatively little external funding for economics and business in the Netherlands (lowest of all eight VSNU domains); • Increasing work pressure on faculty and support staff, partially due to high student-staff ratios in the domain of economics and business in the Netherlands, the highest in the country. • Publication lags in business and economics are long, so that the actual publication is not always in step with the newsworthiness of the research.



4.2. Strategic plans for the next six years

Our strategy for the next six years will continue and extend our course as it has developed over the last years, described in Chapter 2.

Scientific impact

To continue to produce high-quality research, we will maintain performance evaluation policies that emphasize research quality over quantity. Moreover, we aim to improve our international visibility. International rankings indicate that our reputation trails our objective performance. Relatedly, we will pay more attention to the visibility and citation impact of our publications. We seek to further increase the research time that faculty has available, enabled by growth of student numbers in recent years, which results — with delays — in increased research funding. If finances allow us to do so, we plan to increase the research budgets at the level of both departments and individuals and invest in research infrastructure including data availability and up-to-date lab facilities.

Societal impact

We aim to further leverage the potential synergy between high quality research and engagement with business and society. SBE has initiated several innovative combinations of these two, such as the ABN-AMRO 'Leading for Better' program that combines in-house executive education with research; SPINlab, building a spatial data infrastructure and research capacity in interaction with societal partners and the KIN Center for Digital Innovation, where long-standing collaborations are the source for top publications. Extending such initiatives will be facilitated by our recently founded Engagement Office, which supports researchers in the acquisition of contract research and the management of collaborations. Moreover, we are improving the infrastructure for communication about our research. In 2021, the VU is launching an entirely new website, allowing more attractive and dynamic presentation of research. The reinvigoration of the profile themes of the Vrije Universiteit (Connected World; Governance for Society; Sustainability; and Health) will enable us to showcase our research, which connects to all of these themes.

Open science and research integrity

In the coming years we aim to further contribute to — and benefit from — the advantages of open science. By the end of the next evaluation period, we aim to have achieved 100% open access availability of our publications. To close the remaining gap and reach 100% open access, we are working at the VU to simplify and extend green open access routes (making use of the Taverne amendment opt-out instead of opt-in, and implementing a rights-retention strategy). We encourage further steps in making data FAIR (Findable, Accessible, Interoperable and Reusable) where possible, taking into account the restrictions imposed by privacy-sensitive and confidential data. As a foundation for FAIR data, we will further implement our data-management policy, using new tools as they become available (e.g. ResearchDrive, OSF, iRods/Yoda). At the same time, we will endeavour to avoid placing an unnecessary burden on researchers, for instance by streamlining privacy, ethics and data-management processes for researchers.

Acquisition of research funding

We aim to increase the percentage of external funding in the coming period, by tapping into thus far underexploited opportunities (especially from the EU), while maintaining success rates with other sources (e.g. NWO Talent Scheme). In particular, the new Horizon Europe program provides new opportunities for our researchers thanks to its joint focus on scientific impact and societal impact. SBE recently hired a grant advisor to better support researchers seeking to acquire external funding from the EU and other research councils, and to increase likelihood of success. With this grant advisor and a new legal advisor, we will be further professionalizing the support processes at the Research Office.

Talent/HRM

An important aim for the coming years is to further increase diversity in our faculty, particularly at the associate professor and full professor levels. Although we have increased diversity over the evaluation period and met objectives that were set, we are not yet satisfied, with the share of female professors, and with ethnic diversity. We will intensify our efforts to analyze the causes of imbalance, and design corrective measures. Moreover, another key development is adaptation to post-pandemic society, seeking to maintain commitment and community, and develop new ways of working where relevant.

PhD policy

We are very happy with the results of our PhD programs and the placement results of our PhDs. Over the coming assessment period, we seek to further improve where possible, by continuing and intensifying measures to reduce delays and drop-outs from PhD trajectories, and to facilitate placement at top universities. This includes, for instance, further developing the ABRI workshops series for PhDs on managing an academic career. Where possible we will seek collaboration with other universities to be able to leverage their distinct expertise.

5. Summary

The mission of School of Business and Economics is summarized as *Science with Purpose*. We believe in synergy between research, teaching and engagement with companies, governmental organizations and society at large. In line with our mission, we have a dual strategic aim to generate *scientific impact* and *societal impact* with research in economics, econometrics, finance and various domains in business and management. Our research addresses fundamental questions in relation to current phenomena, as exemplified in the case studies accompanying this self-evaluation, which address human decision-making as revealed in game shows, individual job crafting in a team context, the use of smart incentives to address traffic problems such as congestion and the use of artificial intelligence in the workplace.

We perform high-quality empirical and theoretical research, and offer researchers autonomy and supportive communities to do so. We aim to publish in top journals that have the highest standards for rigor and novelty, and thereby seek to push the boundaries of our fields. Compared to the prior evaluation period, our number of top publications has more than doubled for business and nearly doubled for economics, and our publications are skewed towards the absolute top. These continuing upward trends are indicative of the quality and potential of our researchers. This is also evidenced by the range of researchers with editorial board or associate editor positions at top journals. Moreover, SBE has nine economists in the Dutch Economists Top 40, of which six are in the top 15, including the top position.

To signal the importance of generating societal impact with research, we made it an explicit pillar in our career track. Altmetric data indicates that our research is receiving greater attention, and SBE researchers are engaged in many structural collaborations with business and governmental organizations, for instance through funded PhD positions and memberships in influential advisory boards.

We are proud of the quality and commitment of our researchers. To attract and nurture high quality researchers, we are open to diversity, and provide a stimulating and inclusive environment for everyone. Our recruitment has a strong international focus: more than 70% of faculty hired over the last three years is international. Our regulations seeking to redress the imbalance between female and male faculty have been effective, but more work is needed to continue this trend, and to extend ethnic diversity.

The research master's and PhD programs at ABRI and Tinbergen Institute are of very high-quality: the majority of PhDs go on to obtain positions in academia, often at top universities. This reinforces our international networks and scientific impact, and makes SBE attractive to new PhDs.

SBE researchers have successfully acquired a great deal of external funding, and have done very well when it comes to securing prestigious NWO grants. The ongoing professionalization of our Research Office and Engagement Office will facilitate further acquisition of national and European research grants and contract research.

SBE is well ahead in open science. For journal publications with SBE corresponding authors we are very close to achieving our goal of 100% open access availability. SBE researchers are pioneering open research practices in the fields of business and economics, for instance by building open data platforms, working to further implement research data management, providing the basis for making data FAIR and contributing to the quality and speed of research.

6. Appendices

The appendices include tables with figures on composition, funding and case studies.

Abbreviations list

ABRI	Amsterdam Business Research Institute
AIP	Article Influence score Percentile
BDS	Business Data Science (research master)
BIS	Business in Society (research master)
CBS	Statistics Netherlands
CWTS	Centre for Science and Technology Studies
DBA	Doctor of Business Administration
DMP	Data Management Plan
ECTS	European Credit Transfer and Accumulation System
EDS	SBE Department of Econometrics and Data Science
EGS	SBE Department of Ethics, Governance and Society
ERC	European Research Council
EU	European Union
EUR	Erasmus University of Rotterdam
FAIR	Findable, Accessible, Interoperable, and Reusable
FDL chair	Fenna Diemer Lindeboom chair
FTE	Full Time Equivalent
GDPR	General Data Protection Regulation
GIS	Geographic Information Systems
HRM	Human Resource Management
IBVU	Impact Board of the Vrije Universiteit
IELTS	English Language Testing System
KIN	SBE Department of Knowledge, Information and Innovation
KNAW	Royal Netherlands Academy of Arts and Sciences
M&O	SBE Department of Management and Organisation
MBA	Master of Business Administration
Mphil	Master of Philosophy - Research Master
MSc	Master of Science
NVAO	Dutch-Flemish Accreditation Organisation
NWO	Netherlands Organization for Scientific Research
OA	SBE Department of Operations Analytics
Odissei	Open Data Infrastructure for Social Science and Economic Innovations
OSF	Open Science Framework
RDM	Research Data Management
RERB	Research Ethics Review Board
SBE	School of Business and Economics
SDG	Sustainable Development Goal
STW	Dutch Technology Foundation
TI	Tinbergen Institute
TOEFL	Test of English as A Foreign Language
TSP	Training and Supervision Plan
UvA	University of Amsterdam
VSNU	Association of Universities in the Netherlands
VU	Vrije Universiteit Amsterdam
ZonMw	Dutch organization for healthcare research and healthcare innovation

Table 1 (SEP E1): output indicators

		Quality Domains	
		Research quality	**Relevance to Society**
Assessment Dimensions	**Demonstrable products**	1. Research products for peers ➔ refereed articles (including top publications AIP>.80) ➔ books ➔ chapters ➔ dissertations	4. Research products for societal target groups ➔ reports ➔ professional publications ➔ publications aimed at the general public ➔ SDGs ➔ altmetric scores
	Demonstrable use of products	2. Use of research products by peers ➔ publication and citation analysis	5. Use of research products by societal groups ➔ contract research ➔ projects in cooperation with societal groups
	Demonstrable marks of recognition	3. Marks of recognition from peers ➔ academic awards/prizes ➔ research grants ➔ membership of editorial boards	6. Marks of recognition by societal groups ➔ membership of civil society advisory bodies ➔ appointments of professors funded by societal groups

Table 2 (SEP E2): research staff

Research unit	2015	2016	2017	2018	2019	2020
Economics						
Scientific staff	85/33,93 FTE	83/32,98 FTE	88/32,77 FTE	86/30,77 FTE	92/32,15 FTE	85/31,83 FTE
Postdocs	13/6,55 FTE	20/11,98 FTE	25/15,83 FTE	30/17,62 FTE	29/17,41 FTE	18/11,29 FTE
PhD students	55	49	43	40	45	43
Total*	**153/40.48 FTE**	**152/44,96 FTE**	**156/48,60 FTE**	**156/48,39 FTE**	**166/49,56 FTE**	**146/43,12 FTE**
Business						
Scientific staff	84/28,36 FTE	78/27,98 FTE	96/31,84 FTE	100/32,78 FTE	100/33,61 FTE	102/37,32 FTE
Postdocs	5/1,85 FTE	7/2,47 FTE	6/2,04 FTE	6/3,45 FTE	13/6,44 FTE	10/5,99 FTE
PhD students	36	37	47	52	51	45
Total*	**125/30,21 FTE**	**122/30,45 FTE**	**149/33,88 FTE**	**158/36,23 FTE**	**164/40,05 FTE**	**157/43,31 FTE**
Total* research staff	**70,69 FTE**	**75,41 FTE**	**82,48 FTE**	**84,62 FTE**	**89,61 FTE**	**86,43 FTE**

*excluded PhD FTE

Table 3 (SEP E3): funding

	2015	2016	2017	2018	2019	2020
Economics						
Funding:						
Direct funding	40,55 FTE 56%	39,83 FTE 56%	38 FTE 53%	37,16 FTE 51%	34,89 FTE 48%	34,93FTE 50%
Research grants	16,27 FTE 22%	14,36 FTE 20%	17,93 FTE 25%	16 FTE 22%	19,16 FTE 27%	17,20FTE 25%
Contract research	16,09 FTE 22%	17,48 FTE 24%	15,86 FTE 22%	19,07 FTE 26%	18,23 FTE 25%	17,58FTE 25%
Total funding	**72,92 FTE 100%**	**71,67 FTE 100%**	**71,79 FTE 100%**	**72,23 FTE 100%**	**72,28 FTE 100%**	**69,71FTE 100%**
Expenditure:						
Personnel costs (x €1.000)/ 85%	6.295	6.274	6.579	6.915	7.190	6.934
Other costs (x €1.000) /15%	1.111	1.107	1.161	1.220	1.269	1.224
Total expenditure	7.406	7.381	7.740	8.135	8.458	8.158
Business						
Funding:						
Direct funding	39,71 FTE 80%	40,30 FTE 76%	45 FTE 72%	45,85 TE 70%	47,39 FTE 70 %	50,36FTE 70 %
Research grants	4,54 FTE 9%	4,46 FTE 8%	7,95 FTE 13 %	7,30 FTE 11%	3,79 FTE 6%	4,78FTE 6%
Contract research	5,49 FTE 11 %	8,02 FTE 16 %	9,17 FTE 15%	12,08 FTE 19 %	16,15 FTE 24%	17,30FTE 24%
Total funding	**49,74 FTE 100%**	**52,78 FTE 100%**	**62,12 FTE 100%**	**65,23 FTE 100%**	**67,52 FTE 100%**	**72,44FTE 100%**
Expenditure:						
Personnel costs (x €1.000) / 85%	3.985	4.307	5.350	5.810	6.365	6.953
Other costs (x €1.000) / 15%	703	760	944	1.025	1.123	1.227
Total expenditure	4.689	5.067	6.294	6.836	7.488	8.180

Table 4a (SEP E4): PhD candidates Business

Enrolment				Success rates						
Starting year	Enrolment male / female		Total M+F	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Graduated later than 7 years	Not yet finished	Discontinued
2011	1M	2F	3	1 / 33%	0 / 0%	0 / 0%	1 /33%	0 / 0%	0 / 0%	1 / 33%
2012	1M	7F	8	3 / 38%	3 / 38%	0 / 0%	1 / 12%	0 / 0%	1 / 11%	1 / 11%
2013	4M	6F	10	2 / 20%	3 / 30%	0 / 0%	1 / 10%	0 / 0%	2 / 20%	2 / 20%
2014	4M	10F	14	2 / 14%	8 / 58%	1 / 7%	0 /0 %		2 / 14%	1 / 7%
2015	6M	6F	12	1 / 8%	2 / 17%	3 / 25%	-		5 / 42%	1 / 8%
2016	6M	7F	13	1 / 8%	3 / 23%	-	-		6 / 46%	3 / 23%
Total	**22M**	**38F**	**60**	**10 / 17%**	**19 / 32%**	**4 / 7%**	**3 / 4%**	**0 / 0%**	**16 / 25%**	**9 / 15%**

Table 4b (SEP E4): PhD candidates Economics

Enrolment				Success rates						
Starting year	Enrolment male / female		Total M+F	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Graduated after 7 years	Not yet finished	Discontinued
2011	15M	4F	19	3 / 16%	9 / 47%	2 / 10%	0 / 0%	1 / 6%	0 / 0%	4 / 21%
2012	10M	5F	15	5 / 33%	4 / 27%	3 / 20%	0 / %	0 /0%	1 / 7%	2 / 13%
2013	10M	2F	12	4 / 33%	5 / 42%	0 / 0%	0 / 0%		2 / 17%	1 / 8%
2014	5M	3F	8	1 / 13%	2 / 25%	1 / 13%	0 /0 %		3 / 36%	1 / 13%
2015	5M	2F	7	3 / 43%	3 / 43%	0 / 0%	-		1 / 14%	0 / 0%
2016	10M	2F	12	1 / 8%	4 / 33%	-	-		5 / 42%	2 / 17%
Total	**55M**	**18F**	**73**	**17 / 23%**	**27 / 37%**	**6 / 8%**	**0 / 0%**	**1 / 1%**	**12 / 16%**	**10 / 15%**

Table 5: main categories of research output

	2015	2016	2017	2018	2019	2020
Economics						
Refereed articles	233	224	204	178	223	185
Books*	9	2	0	2	2	0
Book chapters*	27	22	18	18	5	8
PhD thesis	19	23	16	15	17	11
Total Economics	**288**	**271**	**238**	**213**	**247**	**204**
Business						
Refereed articles	154	147	122	148	143	202
Books*	6	2	6	3	3	2
Book chapters*	36	23	13	15	29	9
PhD thesis	8	10	8	13	17	8
Total Business	**204**	**182**	**149**	**179**	**192**	**221**
Total SBE	**492**	**453**	**387**	**392**	**439**	**425**

*Only books and book chapters from the publishers list are included

Publishers List

1 Ashgate
2 Cambridge University Press
3 Columbia University Press
4 Edward Elgar
5 Elsevier/North-Holland (including Academic Press)
6 Emerald Group Publishing
7 Harvard University Press
8 John Wiley & Sons, Inc.
9 Kluwer Academic Publishers
10 MIT Press Publishers Inc.
11 Oxford University Press / Clarendon Pr.
12 Palgrave Macmillan
13 Prentice Hall Press
14 Princeton University Press
15 Routledge (including Ashgate, Chapman & Hall)
16 Sage Publications
17 Springer-Verlag
18 Taylor and Francis (including Ashgate, CRS Press, Chapman & Hall and Routledge for humanities, social sciences, behavioural sciences, law and education)
19 University of Chicago Press

Table 6: number of top publications per year per fte

	2015	2016	2017	2018	2019	2020
Economics						
Research fte	40.48	44,96	48,60	48,39	49,56	45,12
Top articles (>.80)	82	81	78	87	108	108
Total per fte	**2,0**	**1,8**	**1,6**	**1,8**	**2,2**	**2,4**
Business						
Research fte	30,21	30,45	33,88	36,23	40,05	43,31
Top articles (>.80)	37	57	57	71	91	102
Total per fte	**1,2**	**1,9**	**1,7**	**1,9**	**2,3**	**2,3**

Table 7: Projects funded by research grants and contract research 2015-2020 (>k€100)

Name Project	start	end	project leader	department	type
NS International PhD project: Barriers and motivations for online bookings	1-11-2019	31-10-2020	prof. dr. ir. P.W.J. Verlegh	Marketing	Contract research
Erasmus+ GeoS4S-Geoservices for Sustainability research project.	1-1-2016	31-10-2018	dr. N. van Manen	Spatial Economics	Contract research
Netspar: Uncertainty over the life cycle	1-1-2017	31-12-2020	dr. M. Mastrogiacomo	Economics	Contract research
EU H2020 – LIFECYCLE: Early-life stressors and LifeCycle health	1-1-2017	31-12-2021	prof. dr. M. Lindeboom	Economics	Contract research
Blik op Werk - PhD project: Smart Jobs	1-12-2017	30-11-2021	dr. T.J. Akkermans	Management and Organization	Contract research
NWO - Aspasia van Leeuwen: promotion to Associate professor	1-6-2016	31-12-2017	prof. dr. E.T. Verhoef	Spatial Economics	Research grants
NWO - Aspasia Sasovova: promotion to Associate professor	1-7-2015	31-12-2022	dr. Z. Sasovova	Accounting	Research grants
NWO - Aspasia Palmigiano: promotion to full professor	13-3-2020	15-3-2025	prof. dr. A. Palmigiano	Marketing	Research grants
Menzis: patient preferences for hospital care	1-10-2018	31-12-2021	prof. dr. M. Lindeboom	Economics	Contract research
EU MSCA-IF RecessionsHealth Godard: Recessions, labour-market uncertainty and health	1-3-2016	28-2-2018	prof. dr. M. Lindeboom	Economics	Contract research
Royal Haskoning DHV/PhD project Action research	1-9-2015	31-8-2020	prof. dr. P.G.W. Jansen	Management and Organization	Contract research
EU MSCA-IF Steady Iacopini: Score-driven TEnsor Autoregressive DYnamical models	1-9-2020	31-8-2022	dr. M. Iacopini	Econometrics and datascience	Contract research
EU MSCA-IF MultiNetMetrics Rossini: Multiplex Network Econometrics	1-11-2018	31-10-2020	prof. dr. S.J. Koopman	Econometrics and datascience	Contract research
EU MSCA-IF NONCAUSAL Bubble Fries: Noncausal time series models for the forecasting of speculative bubbles	1-7-2020	31-8-2022	dr. ing. S.A. Fries	Econometrics and datascience	Contract research
NWO - PhD project Kroese: Broken Homes and Crime	1-9-2017	30-11-2021	prof. dr. J. Rouwendal	Spatial Economics	Research grants
EU H2020 – Microprod: Raising EU Productivity: Lessons from Improved Micro Data	1-1-2019	31-12-2021	prof. dr. E.J. Bartelsman	Economics	Contract research
STW - 3D4EM: Design and implementation of an SDI for integrated environmental modelling in 3D	1-5-2015	31-7-2019	prof. dr. H.J. Scholten	Spatial Economics	Research grants
NWO – PhD project Noordhoek: Capitalizing on collaboration in sustain-able logistics in food and flower chains	1-9-2015	30-11-2019	prof. dr. ir. S.L.J.M. de Leeuw	Operations Analytics	Research grants
NWO – PhD project Ostermeijer: The spatial economic implications of automated driving	1-6-2016	1-10-2021	prof. dr. J.N. van Ommeren	Spatial Economics	Research grants
NWO – TOP grant: PhD project Frascaria: Understanding Dynamic Aspects	1-9-2016	31-10-2020	prof. dr. L. Stougie	Operations Analytics	Research grants
Research Coordination Network: Algorithmic Accountability	1-9-2020	31-8-2024	dr. M. Boons	KIN	Contract research
NWO - Research talent - PhD project-Yu: Social Costs and Benefits of Financial Technology	1-9-2017	31-8-2022	prof. dr. A.J. Menkveld	Finance	Research grants
NWO – Top sector Water-PhD project: Adaptation Pathways for socially inclusive development of urbanizing deltas	1-9-2017	30-9-2021	dr. E. Koomen	Spatial Economics	Research grants
Gak – PhD project Retkowsky: the psychology of flexibility	1-9-2018	31-8-2022	dr. T.J. Akkermans	Management and Organization	Contract research

NWO Research talent - PhD project Letterie: Estimation of the demand for long-term care in the Netherlands	1-9-2018	31-8-2022	prof. dr. J.L. Moraga Gonzalez	Economics	Research grants
Plan Bureau voor de Leefomgeving PhD project Liu: Enhancing food system sustainability: policy options for influencing consumer demand	1-5-2018	30-4-2022	dr. ir. J.H. Ansink	Spatial Economics	Contract research
NWO – project-postdoc: Building Resilient Economic Agglomerations on Transportation and Health Effects: Urban form, location choice and transport solutions for low-carbon cities	1-6-2016	31-7-2019	dr. S. Poelhekke	Spatial Economics	Research grants
NWO – PhD project Brands: Innovative Policies for Sustainable UrbaN TrANsportation	1-4-2016	31-3-2019	prof. dr. E.T. Verhoef	Spatial Economics	Research grants
NWO – research project: Enhancing urban food security through development of allotment gardens in and around the cities of Benin	1-5-2016	31-10-2019	dr. ir. B.G.J.S. Sonneveld	Economics	Research grants
DNB-Bundesbank-ECB: PhD project Wacker: How to regulate too big to fail - essays on different aspects of financial sector regulation	1-9-2019	31-8-2023	prof. dr. R.C.J. Zwinkels	Finance	Contract research
NWO - VENI Schaumburg: Econometric methods for assessing non-standard monetary policy impacts	1-1-2016	28-2-2019	dr. J. Schaumburg	Econometrics and datascience	Research grants
NWO - VENI Koster: Planning, places, prices and politics: the economics of spatial planning policy	1-1-2015	31-12-2018	prof. dr. H.R.A. Koster	Spatial Economics	Research grants
NWO - VENI Tims: Looking for the "I" in teams while still functioning as a team: Individual job crafting and its relationships with individual, team, and organizational outcomes	1-1-2017	31-12-2019	dr. M. Tims	Management and Organization	Research grants
NWO - VENI Aydinli: From Cash to Trash: How Price Promotions Impact Food Waste	1-1-2020	31-12-2022	dr. A. Aydinli	Marketing	Research grants
NWO - VENI Okbay: Polygenic prediction and its application in social science	1-9-2018	31-8-2021	dr. A. Okbay	Economics	Research grants
NWO - VENI Geert Mesters: Testing Networks	1-9-2018	31-8-2021	dr. G. Mesters	Econometrics and datascience	Research grants
Netspar – research project: The effect of macroprudential policy on pensions and pension preparation	1-9-2020	31-8-2023	dr. S. Hochguertel	Economics	Contract research
NWO - Open competition –PhD project Custodio: Graph-based clustering applied to bank data	1-7-2020	30-6-2024	prof. dr. A. Lucas	Econometrics and datascience	Research grants
Ministry of Social Affairs and Employment: research project Appreciation	1-5-2019	31-10-2021	dr. M.M. Rietdijk	Management and Organization	Contract research
NWO – PhD project Tare: Sustainable Mobility and Equality in mega-ciTy Reglons: patterns, mechanisms and governance	1-3-2019	1-6-2023	dr. E. Koomen	Spatial Economics	Research grants
NWO U-Pass - Urban Public Administration and ServiceS innovation for Innovative Urban Mobility Management and Policy – PhD Riquelme	1-3-2019	31-7-2023	prof. dr. E.T. Verhoef	Spatial Economics	Research grants
Ministry of Foreign Affairs: Research project: Sunshine	1-5-2019	31-12-2019	dr. C.F.A. van Wesenbeeck	Economics	Contract research

SENSLOG research project – the use of sensors in Logistics	1-2-2018	31-5-2021	prof. dr. W.E.H. Dullaert	Operations Analytics	Contract research
NWO - Accelerator research project: Understanding and leveraging B2B behaviour for improved supply chain sustainability	1-3-2020	31-12-2021	prof. dr. W.E.H. Dullaert	Operations Analytics	Research grants
NWO – UMO Urban Mobility Observatory research project (with TU Delft)	1-7-2019	30-6-2024	prof. dr. E.T. Verhoef	Spatial Economics	Research grants
Municipality of Amsterdam - North-South metro line research project	1-7-2017	30-6-2021	prof. dr. E.T. Verhoef	Spatial Economics	Contract research
NWO/ZonMw COVID-19 research project: Vulnerable in Amsterdam: The organization and effects of support to vulnerable groups during and after the corona-crisis	1-9-2020	31-8-2022	prof. dr. ir. J.C. van Burg	Management and Organization	Research grants
BSH- PhD project Borner: Developing connected product in the home automation industry	1-10-2018	30-9-2022	prof. dr. F. Feldberg/ prof. dr. H. Berends	KIN	Contract research
Virginia Commonwealth University-National Institutes of Health Research Project USING THE GENETIC ARCHITECTURE OF SUBSTANCE USE DISORDERS TO ADVANCE GENE IDENTIFICATION AND UNDERSTANDING OF PATHWAYS OF RISK	1-4-2020	30-6-2025	prof. dr. P.D. Koellinger	Economics	Contract research
NWO Platform Digitale Infrastructuur Social Sciences and Humanities – research project FIRMBACKBONE, an organically growing longitudinal data-infrastructure	1-10-2020	30-9-2025	prof. dr. A. van Witteloostuijn	Ethics, Governance and Society	Research grants
IXAnext Talent for Innovation Research project	1-1-2017	1-1-2021	prof. dr. E. Masurel	Management and Organization	Contract research
Gak – PhD project Prudon: Suitable or unfit for work? Analyzing the effects of disability reforms	1-5-2018	30-6-2023	prof. dr. P.W.C. Koning	Economics	Contract research
European Regional Development Fund – Research project: organizing digital innovation in ecosystems	1-9-2018	31-12-2022	dr. L.C.M. Agterberg	KIN	Contract research
NWO – Research project: Using Climate-Smart Financial Diaries for Scaling in the Nyando Basin, Kenya	1-11-2017	30-4-2021	prof. dr. R.H. Oostendorp	Economics	Research grants
NWO – Platform for responsible innovation research project	1-9-2018	31-8-2021	prof. dr. H.R.A. Koster	Spatial Economics	Research grants
NWO ZonMw Covid-19 research project: Mobility during and after corona lockdown: sustainability, safety, inclusivity	15-9-2020	14-9-2022	prof. dr. E.T. Verhoef	Spatial Economics	Research grants
NWO - WOTRO research project: Reducing trade-offs and increasing synergies associated with improved food security in Lao PDR and Myanmar	1-2-2018	31-5-2022	prof. dr. P.F. Lanjouw	Economics	Research grants
EU MSCA-ITN – GLOMO: Global mobility of employees	1-1-2018	31-12-2021	prof. dr. S.N. Khapova	Management and Organization	Contract research
EU MSCA-ITN- MIRIADE: Multi- omics Interdisciplinary Research Integration to Address DEmentia diagnosis	1-7-2020	31-10-2023	dr. P. Tuertscher	KIN	Contract research
NWO research project: Responsible use AI	1-1-2021	31-12-2024	prof. dr. A. Palmigiano	Ethics, Governance and Society	Research grants
EU H2020 – NexTrust research project: Large pilot case in market conditions of a trusted collaborative vehicle network	1-5-2015	30-10-2018	prof. dr. W.E.H. Dullaert	Operations Analytics	Contract research
NWO - Crossover Collaboration for Digital Innovation research project	1-6-2015	15-9-2020	prof. dr. M.H. Huysman	KIN	Research grants

NWO - Open Competition PhD research projects Karacic, Sosa Hidalgo: Knowledge work in the age of AI	1-9-2019	1-3-2024	prof. dr. M.H. Huysman	KIN	Research grants
NWO - VIDI Olver: Usable algorithms for network optimization	1-10-2018	31-10-2019	prof. dr. A. Lucas	Econometrics and datascience	Research grants
NWO - VIDI Galama: What explains socioeconomic inequality in health?	1-11-2018	31-10-2023	dr. T.J. Galama	Economics	Research grants
NWO - VIDI v.d. Assem: Economic behaviour on TV	1-9-2016	31-8-2022	prof. dr. M.J. van den Assem	Finance	Research grants
NWO - VIDI Schaumburg: Statistical learning over time: closing the gap between time-series econometrics and the statistical learning literature	1-9-2021	31-8-2026	dr. J. Schaumburg	Econometrics and datascience	Research grants
NWO - VIDI Blasques: Econometric methods for incorrect models	1-12-2019	30-11-2024	prof. dr. F. Blasques	Econometrics and datascience	Research grants
EU ERC Consolidator: The molecular genetic architecture of educational attainment and its significance for cognitive health	1-9-2015	31-8-2020	prof. dr. P.D. Koellinger	Economics	Contract research
NWO - U-SMILE research project: Urban Smart Measures and Incentives for quality of Life Enhancement	1-4-2016	31-1-2021	prof. dr. E.T. Verhoef	Spatial Economics	Research grants
NWO - VICI v.d. Klaauw: Improving Human Capital by Allocating Individuals Efficiently to Schools and Jobs	1-7-2016	31-7-2022	prof. dr. B. van der Klaauw	Economics	Research grants
NWO - VICI Menkveld: Financial Techology's (FinTech's) Disruptive Impact on Financial Markets: Social Costs and Benefits of an Emerging New Architecture	1-9-2018	31-8-2024	prof. dr. A.J. Menkveld	Finance	Research grants

10 Key publications

Key publications Economics

1. De Ree, J., Muralidharan, K., Pradhan, M., & Rogers, H. (2018). Double for nothing? Experimental evidence on an unconditional teacher salary increase in Indonesia. *Quarterly Journal of Economics,* 133(2), 993-1039. https://doi.org/10.1093/qje/qjx040

Summary:
How does a large unconditional increase in salary affect the performance of incumbent employees in the public sector? This paper presents experimental evidence on this question in the context of a policy change in Indonesia that led to a permanent doubling of teachers' base salaries. The analysis uses a large-scale, randomized experiment across a representative sample of Indonesian schools that accelerated this pay increase for teachers in treated schools. The findings show that the large pay increase significantly improved teachers' satisfaction with their income, reduced the incidence of teachers holding outside jobs, and reduced self-reported financial stress. Nevertheless, after two and three years, the increase in pay led to no improvement in student learning outcomes. The effects are precisely estimated, making it possible to rule out even modest positive impacts on test scores. The results suggest that unconditional pay increases are unlikely to be an effective policy option for improving the effort and productivity of incumbent employees in public sector settings.

Scientific impact:
The AIP score of Quarterly Journal of Economics is 100; The paper has a citation percentile of 95 in Scopus.

Societal impact:
A good example of how a large-scale RCT can arrive at highly policy-relevant insights: Contrary to all expectations, doubling teachers' salaries does NOT lead to an improvement in the learning outcomes of children. The paper was mentioned in 9 news outlets in India, Croatia and the USA, and used in 3 policy sources of the World Bank and the Analysis and Policy Observatory.

2. Van Kervel, V., & Menkveld, A. J. (2019). High-Frequency Trading around Large Institutional Orders. *Journal of Finance*, 74(3), 1091-1137. https://doi.org/10.1111/jofi.12759

Summary:
In this paper we analyze whether high-frequency traders (HFTs) lean against large institutional orders that execute through a series of child orders. The alternative is HFTs trading with the wind, that is, in the same direction. We find that HFTs initially lean against these orders but eventually change direction and take positions in the same direction for the most informed institutional orders. Our empirical findings are consistent with investors trading strategically on their information. When deciding trade intensity, they seem to trade off higher speculative profits against higher risk of being detected and preyed on by HFTs.

Scientific impact:
The AIP score of the Journal of Finance is 100; The paper has a citation percentile of 98 in Scopus.

Societal impact:
The first draft was published in 2015 and then cited on Bloomberg and in Financieele Dagblad. This topic was also discussed recently in the media: VBA Journaal, De Vooravond (prime-time tv), and Financieele Dagblad, a leading newspaper.

3. Karabiyik, H., Urbain, J. P., & Westerlund, J. (2019).CCE estimation of factor-augmented regression models with more factors than observables. *Journal of Applied Econometrics,* 34(2), 268-284. https://doi.org/10.1002/jae.2661

Summary:
In an extensively connected world, supply and demand shocks, technological shocks, political shocks have global effects that lead to a correlation between countries' economic indicators. Leaving such correlations unattended for leads to misleading conclusions when estimating empirical models. One solution is the "Common Correlated Effects" (CCE) method that augments the original regression model with cross-sectional averages of all variables. The validity of this method, however, relies on the assumption that the number of observed variables is not smaller than the number of global shocks. The paper proposes a modification of the CCE methodology that relaxes this assumption. The idea is to augment the regression model not only with the simple cross-sectional averages, but also with other cross-sectional combinations. By doing so, we can allow for more global shocks than the number of observed variables. The method is easily applicable for a wide and important group of applied researchers to accurately estimate macroeconomic empirical models for large data sets from multiple countries over long time periods.

Scientific impact:
The AIP score of theJournal of Applied Econometrics is 95; the paper has a citation percentile of 80 in Scopus.

Societal impact:
This paper is an example of how the theoretical research in Econometrics and Data Science leads to new methodology that is easily adaptable (and adapted) by a wider community of applied researchers.

4. Koster, H. R. A. & van Ommeren, J. (2019), Place-based policies and the housing market, *Review of Economics and Statistics*, 101, 3, 400-414. https://doi.org/10.1162/rest_a_00779.

Summary:
Inequality and poverty, and their spatial concentration in cities, are among the greatest challenges that (urban) governments face throughout the world. The persistence of these challenges underlines the difficulty of designing effective policies to combat these problems. This paper studies the economic effects of so-called place-based policies in the Dutch housing market, by investigating the effects of a place-based program on prices of surrounding owner-occupied properties. The program improved the quality of public housing in 83 impoverished neighborhoods throughout the Netherlands. The paper combines a first-difference approach with a fuzzy regression-discontinuity design to address the fundamental issue that these neighborhoods are endogenously treated. Improvements in public housing induced surrounding housing prices to increase by 3.5%. The program's external benefits are sizable and at least half of the value of investments in public housing.

Scientific impact:
The AIP score of the Review of Economics and Statistics is 98. The paper has a citation percentile of 67 in Scopus.

Societal impact:
In this paper we aim to help understanding and addressing societal challenges through innovative economic research. In this paper we investigated if the program has positive effects on the housing market and neighborhoods. The paper shows that the program has been effective in increasing the welfare of poor households.

Key Publications Business

5. Solinger, O. N., Jansen, P. G., & Cornelissen, J. P. (2020). The emergence of moral leadership. *Academy of Management Review,* 45(3), 504-527.

Summary:
The paper is about how moral leadership can operate to forge a better world with implications for entire moral systems (not just individuals). It explicates how through leadership one can correct wrongdoings that have gone unnoticed and change moral systems from within. The paper thus bridges between HR/OB and fields of strategy and organizational change.

Scientific Impact:
The AIP score of the Academy of Management Review is 99. The paper has a citation percentile of 91 in Scopus. It is the most-read article of the journal in 2020.

Societal impact:
The paper discusses a topic that carries strong practical relevance given the fact that businesses and their leaders can no longer afford to navigate only on business or market types of moralities.

6. Van Duin, S. R., Dekker, H. C., Wielhouwer, J. L., & Mendoza, J. P. (2018). The Tone from Above: The Effect of Communicating a Supportive Regulatory Strategy on Reporting Quality. *Journal of Accounting Research,* 56(2), 467-519. https://doi.org/10.1111/1475-679X.12205

Summary:
The paper presents results of an extensive field experiment conducted in collaboration with the Authority for the Financial Markets (AFM) in the Netherlands. The study was based on a registered report in which hypotheses, experimental procedure, and planned statistical analyses were submitted before data collection. Analyses and reporting strictly followed the pre-registered report. Two theory-based alternative supervision strategies were formulated and implemented through the AFM's communication towards financial intermediaries. The experiment provides insight into the effects of these strategies on the quality of intermediaries' reports to the market supervisor, differentiated by firm conditions. The paper was part of the PhD dissertation of the first author, and was published before her graduation in the primary publication outlet in the field of Accounting (AIP 0.99; research quality).

Scientific Impact:
The AIP score of the Journal of Accounting Research is 99. The paper has a citation percentile of 52 in Scopus.

Societal impact:
Based on the interest in this study the researchers were approached by another market supervisor (ACM) to set up a range of new studies on market supervision policies and approaches. The experiment provides insight into the effects of these strategies on the quality of intermediaries' reports to the market supervisor, differentiated by firm conditions. It provides valuable insights for the AFM and regarding theory on regulatory supervision.

7. **van de Wardt, Marc & Arjen van Witteloostuijn (2019) 'Adapt or perish? How parties respond to party system saturation in 21 Western democracies, 1945-2011'. *British Journal of Political Science.* Advance online publication, https://doi.org/10.1017/S0007123419000152.**

Summary:
In this article we bring organizational ecology to the study of political parties. Organizational ecology is a well-known theoretical perspective within organizational sociology. It posits that likeminded organizations compete for the same scarce resources. When the carrying capacity of their environment is reached, new organizations will be deterred from entry and existing organizations will be driven out of business. The underlying assumption is that parties are usually unable to effectively adapt to their environment, as they resist changes to their core. We apply this theory to the competition between political parties. We developed a novel measure of party system saturation that captures to what extent the carrying capacity for political parties is exceeded. We find indeed that when the party system is oversaturated, parties resist changes to their core: They do not change their platform to set themselves better apart from their competitors nor do they merge with other parties. We did, however, find that parties are more likely to contest elections in alliances. But, this is not a change to a party's organizational core. Hence, the organizational ecology theory is firmly supported.

Scientific impact:
The AIP score of the British Journal of Political Science is 97. The paper has a citation percentile of 91 in Scopus.

Societal impact:
This article is an excellent example of how a theoretical perspective from one field (organizational sociology) can be used to yield novel insights and measures in another discipline (political science).

8. **R. Paradiso, R. Roberti, D. Laganá, W. Dullaert (2020). An Exact Solution Framework for Multitrip Vehicle-Routing Problems with Time Windows. *Operations Research* 68(1):180-198. https://doi.org/10.1287/opre.2019.1874.**

Summary:
This paper proposes a novel algorithm to find an optimal distribution plan to vehicle routing problems arising in last-mile delivery. The algorithm can deal with a variety of features encountered in practice: time windows, release dates, service times, loading times, maximum trip duration, etc.
It can provide optimal distribution plans not only when traditional vehicles are deployed but also when electric vehicles or drones are available. From a methodological standpoint, the novelty of the proposed algorithm arises from the usage of a unique mixed-integer linear mathematical model that features an exponential number of variables and constraints.

Scientific impact:
The AIP score of Operations Research is 94. The paper has a citation percentile of 87 in Scopus. The paper was awarded the TSL Best Award 2020, which is the most prestigious award for papers published in the Transportation and Logistics domain given by INFORMS, the Institute for Operations Research and the Management Sciences.

Societal impact:
The paper contributes to the Operations Research domain, in particular to the theory and practice of column generation, cutting plane, and decomposition methods. The method outperforms other state-of-the-art solution methods from the literature by doubling the size of the problems that can be solved to optimality: from 20-25 customers to 40-50 customers.

9. **Deken, F., Berends, H., Gemser, G., & Lauche, K. (2018). Strategizing and the initiation of interorganizational collaboration through prospective resourcing. *Academy of Management Journal,* 61(5), 1920–1950. https://doi.org/10.5465/amj.2016.0687**

Summary:
This paper — published in the premier journal for empirical research in management — brings together two core strands of management literature: strategy development and interorganizational collaboration. It challenges an assumption that underlies both: that resource needs drive collaboration for strategic initiatives. The paper examines the evolving collaboration dedicated to the digital innovation of an automotive firm (digitally connected vehicles and associated services). This paper shows how joint exploration of technologies shaped strategic initiatives, which in turn shaped the value of resources and the configuration of collaborating partners. A key implication is that organizations should not try to define 'missing pieces' too early, but rather interact early with potential partners to jointly explore the possible application of resources. As such, this paper redefines core assumptions in the management literature and illustrates the power of qualitative process research to make theoretical contributions.

Scientific impact:
The AIP score of the Academy of Management Journal is 98. The paper has a citation percentile of 95 in Scopus.

Societal impact:
The results of this work have been used in workshops of the KIN Center for Digital Innovation and have triggered new research in collaborative innovation.

10. **Ikonen, I., Sotgiu, F., Aydinli, A., & Verlegh, P.W.J. (2020). Consumer effects of front-of-package nutrition labeling: an interdisciplinary meta-analysis.** *Journal of the Academy of Marketing Science* **48, 360–383.** https://doi.org/10.1007/s11747-019-00663-9

Summary:
As consumers continue to struggle with issues related to unhealthy consumption, the goal of front-of-package (FOP) nutrition labels is to provide nutrition information in more understandable formats. The marketplace is filled with different FOP labels, but their true effects remain unclear, as does which label works best to change perceptions and behaviors. We address these issues through an interdisciplinary meta-analysis, generalizing the findings of 114 articles on the impact of FOP labels on outcomes such as consumers' ability to identify healthier options, product perceptions, purchase behavior, and consumption. The results show that, although FOP labels help consumers to identify healthier products, their ability to nudge consumers toward healthier choices is more limited. Importantly, FOP labels may lead to halo effects, positively influencing not only virtue but also vice products, e.g., interpretive nutrient-specific labels improve health perceptions of both vice and virtue products, yet they influence only the purchase intention of virtues.

Scientific impact:
The AIP score of the Journal of the Academy of Marketing Science is 95. The paper has a citation percentile of 99 in Scopus.
This meta-analysis, written by our PhD student Iina ikonen and three other members of the Marketing department, was finalist for the journal's 2020 best paper. An earlier draft of the paper won the 2019 Brenda Derby Honorary Award for Best Student Paper at the AMA Public Policy & Marketing conference.

Societal impact:
The paper makes an important contribution to practice as it identifies what type of nutritional labels are most effective, distinguishing between different effects (how well do they help consumers to choose healthy foods, do they affect the perception of the product, and influence consumer purchasing behavior?). It also looks at differences between types of food (healthy versus unhealthy products), differences between countries and the influence of the chosen research method.

Case Studies

1. Game Show Economics: Decision Making in High Stakes Natural Experiments

Vidi project Prof. Dr. Martijn J. van den Assem (2016-2022)

Scientific impact of the research. Understanding how people make choices is crucial for effective organizational and public policy design. If we do not know how people behave under various circumstances and what it is that drives their decisions, interventions are effectively not much more than shots in the dark. Van den Assem uses data from unconventional sources to learn about people's economic behavior. His project, funded by an NWO Vidi grant, builds on three earlier collaborations with 2017 Nobel Prize in Economics laureate Richard Thaler. Much of what we know about individual decision making derives from laboratory experiments. An important concern, however, is whether findings from a laboratory can be generalized to real-world environments. One recurring objection is that experimenters are normally unable to create high stakes environments. Other generalizability concerns arise from the fact that participants in experimental research are mostly volunteering students, and that experiments are often performed in a computerized laboratory with a relatively high degree of anonymity. This research project takes an alternative approach. Because it is impossible to study behavior under each and every possible set of conditions, the optimal approach is to study behavior in a limited number of diverging situations. TV game shows are one of these. Game shows are typically repeated under similar conditions, with the same strict and well-defined rules, and beyond the control of the experimenter. Complementary to conventional experiments and field research, they allow the study of the behavior of a diverse subject pool in a high-scrutiny field setting where the stakes are high.

Since its start, the project has resulted in several publications in world-class academic journals such as *Management Science*[1] and *Nature Human Behavior*[2], and in a strong pipeline of working papers. One of the published studies investigates the credibility of nonbinding preplay statements about cooperative behavior. The study uses data from a high-stakes TV game show in which contestants play a variant on the classic Prisoner's Dilemma.

'This research sheds important new light on the **persistent gender gap** at the male-dominated top of the career ladder'.

It finds that that noncooperative people tend to resort to statements that are malleable in terms of interpretation, most likely because these allow them to deny that they are lying. A recent working paper analyzes gender differences in willingness to compete for high stakes, using the elimination competition of a long-running Dutch TV game show. It confirms the well-known pattern that women are less likely to compete than men, but shows that this difference derives entirely from women avoiding competition against men. This sheds important new light on the persistent gender gap at the male-dominated top of the career ladder.

Societal impact of the research. The project received considerable media attention. Several papers are in the top 5% of all research outputs scored by Altmetric. High-quality media such as Süddeutsche Zeitung, Trouw, Volkskrant, and Bloomberg wrote about the research. Summaries of the research on the social network Twitter generated tens of thousands of views and thousands of engagements. As such, the project perfectly aligns with SBE's dual strategic aim to generate both scientific and societal impact.

Personal impact. Martijn van den Assem was promoted to full professor shortly after the grant was awarded. The grant enabled him to hire an experienced postdoc researcher and to initiate and maintain new collaborations. Postdoc researcher Dennie van Dolder recently accepted an associate professorship at the department of economics at the University of Essex, one of the top-ranked places in the UK. Bouke Klein Teeselink obtained his PhD in 2021 and then started as a postdoctoral researcher at Yale School of Management.

1 Turmunkh, U., Van den Assem, M. J., & Van Dolder, D. (2019). Malleable Lies: Communication and Cooperation in a High Stakes TV Game Show. *Management Science*, 65(10), 4795-4812. https://doi.org/10.1287/mnsc.2018.3159

2 van Dolder, D., & van den Assem, M. J. (2018). The Wisdom of the Inner Crowd in Three Large Natural Experiments. *Nature Human Behaviour*, 2(1), 21-26. https://doi.org/10.1038/s41562-017-0247-6

2. Looking for the "I" in teams while still functioning as a team: Individual job crafting and its relationships with individual, team, and organizational outcomes

Veni Project of Dr. Maria Tims (2016-2019)

Scientific impact of the research. Businesses depend on their employees to generate output and research has shown that employee well-being is of utmost importance for employee performance. Individual-level job redesign (i.e., job crafting) has been offered as an important, cost-effective, and bottom-up strategy to maintain a good person-job fit over time, which in turn, predicts increased work engagement and job performance. However, it remained unclear how job crafting unfolds in a team context, in which changes made by one person may impact the way colleagues have to go about doing their work. Insights into personal and team characteristics that facilitate successful individual and team outcomes are needed to overcome theoretical inconsistencies and practical limitations. The studies supported by this Veni grant examined how team members/supervisors perceive job crafting and how they respond to it, by examining which factors they take into account, how they attribute the job crafting behaviors, and whether they affect both individual and team member outcomes. A conceptual review published in *Organizational Psychology Review*[3] proposes that the impact of job crafting on colleagues and the personal characteristics of colleagues determine whether they attribute a prosocial motive to the crafting behaviour, which in turn results in antagonism or support of this proactive behaviour. Moreover, personal characteristics of the job crafter should be taken into account when examining the relationship between the colleague reaction and the ultimate outcome of job crafting, work-related well-being of the crafter. Empirical studies examining the propositions led by PhD students recruited on the Veni proposal find support for positive/negative attributions of the job crafter by supervisors and colleagues[4] (Fong et al., 2020) and for the influence of personal and situational characteristics of team members (working papers of Twemlow et al.). Thus, the research contributes to science by increasing knowledge about how to facilitate individual talents within an interdependent team context.

Societal impact of the research. At the societal level, around 2.7 million employees experience high job demands, resulting in work stress, burnout complaints and absenteeism. The studies supported by the Veni grant provide direct knowledge about how employees can craft their job such that it becomes a job in which they can stay healthy, motivated, and productive. Moreover, the studies help managers and their teams to achieve better person-job and person-team fit as guidelines have been formulated regarding how teams can best coordinate their efforts to achieve their goals. Workshops, for example at ABN AMRO, Berenschot, and NRO, have been provided to share the insights with (HR) managers and employees. Furthermore, Maria Tims collaborated with profit (Achmea, ABN AMRO) and not-for-profit organizations (Kruisvereniging Brabant) to study team dynamics in proactive behaviors.

Personal impact. The VENI grant further supported the autonomy in research agenda and to establish valuable collaborations with top researchers across the world (e.g., research visits to Australia, organization of Small Group Meeting at VU, international collaborations). Due to the dedicated focus on research, collaborations with other researchers on the topic of job crafting were feasible and resulted in additional research output. Moreover, the grant supported taking up Associate Editorships at *Journal of Vocational Behavior* and *Organizational Psychology Review* which helped in building international networks due to the enhanced focus on research.

'The studies provide **direct knowledge** about how employees can craft their job such that it becomes a job in which they can stay healthy, motivated, and productive'

3 Tims, M., & Parker, S. K. (2020). How coworkers attribute, react to, and shape job crafting. Organizational Psychology Review, 10(1), 29-54.

4 Fong, C. Y. M., Tims, M., Khapova, S. N., & Beijer, S. (2020). Supervisor reactions to avoidance job crafting: The role of political skill and approach job crafting. Applied Psychology. Advance online publication, doi.org/10.1111/apps.12273.

3. Smart Incentives for Managing Traffic Externalities

Background. External effects from road transport – such as congestion, emissions, accidents risks and noise – are not only one of the most challenging problems facing contemporary cities throughout the world; they also form the classical example of externalities that Arthur Pigou used in 1920 to explain how markets fail, and how governments may respond to correct such market failures. The remedy Pigou proposed was corrective pricing, the point in case being road pricing. Despite the economic logic behind this instrument, and the substantial welfare gains it is usually anticipated to bring, it has only been sparsely implemented in practice; well-known examples being limited to cities like London, Stockholm and Singapore. The highly limited social and political acceptability of road pricing, like that of CO2- and other environmental taxes, has motivated a large and still growing literature worldwide, part of which originating from SBE-VU.

A series of externally funded projects. In particular, in a series of experiments, researchers from the Department of Spatial Economics have investigated innovative financial instruments for the management of travel behaviour. Invariably, these experiments have been carried out in collaboration with societal partners, and typically involved externally funded PhD and Postdoc researchers. Societal partners include, among others, the national Ministry of Transport, Dutch National Railways, local authorities (e.g. in Rotterdam, Groningen, Amsterdam, The Hague) and employers (notably the Headquarters of the Dutch Automobile Association ANWB). Project funding was obtained from national and European programmes, including the NWO funded project U-Smile, and the Urban Europe projects U-Pass and IP-Suntan; all led by SBE-VU, and each involving collaboration with societal and academic partners from various disciplinary backgrounds.

Pricing, rewarding, or tradable mobility permits? The said experiments applied automated detection of mobility behaviour, depending on the project setting involving GPS tracking of mobile telephones, automated detection of vehicles through road side equipment or parking monitoring, or using apps in lab-in-the-field type of settings. The earlier projects applied monetary rewards as incentives for behavioural change. After the first "Spitsmijden" (Peak Avoidance) experiments of this type in road transport and among rail travellers, in which SBE-VU was among the lead academic partners, the concept of Spitsmijden received spin-off also outside academia and was applied in a number of other occasions, often also without SBE-VU involvement. While these experiments have demonstrated a strong impact of rewarding on mobility behaviour, in particular departure time choice, an important downside is the simple fact that large budgets are required to have structural rewarding policies in place. Picking up on earlier ideas published as long ago as 1997 (but being deemed practically infeasible in those days before mobile telephones), research at the VU moved on to consider the budget-neutral policy of tradable permits as a potential instrument for the management of mobility behaviour. Recent experiments investigated this option in an experimental Lab-in-the-Field setting, as well as in setting with tradable parking rights among employees of the Dutch Automobile Association. Currently, a GPS-based Tradable Peak Permit experiment is in preparation, to be carried out jointly with Beijing Jiaotong University among morning peak road users in Beijing, China.

Societal relevance meets academic ambitions. Both the concept of rewarding and that of tradable mobility permits have attracted attention and interest from societal parties (hence the collaborations and the take up of the concept by others), have opened the possibility of substantial external funding of (PhD) research, have helped us strengthening collaborations with partner universities, and have enabled innovative academic research, leading to publications in a variety of journals including *International Economic Review*, and *Transportation Research Part B*.

'Currently, a **GPS-based Tradable Peak Permit experiment** is in preparation, to be carried out jointly with Beijing Jiaotong University among morning peak road users in Beijing, China'

4. AI@Work

Artificial Intelligence (AI) is being rapidly introduced into the workplace, generating many questions on the consequences of AI for work and organizations. The AI@work programme of the KIN center for Digital Innovation (led by Marleen Huysman) has been internationally leading with studies of the actual development, implementation and use of AI in organizations. With this research AI@work researchers provide counterweight to the hyped expectations or doom scenarios that dominate the debate on AI at work, and offer in-depth empirical understanding in the dynamics at place when applying AI technologies in practice.

AI@work emerged out of the three SBE-funded PhD projects as part of the ABRI PhD program, by Stella Pachidi, Lauren Waardenburg, and Elmira van den Broek. Engaging closely with case organizations, they investigated the introduction of algorithmic technologies in sales, police work, and HR (hiring decisions). Their work for instance pointed at the emergence of new organizational roles, the challenges of developing a system that fits within the organizational domain, and the risks of overly relying on data driven technologies. These studies inspired an NWO Open Competition grant for investigating the impact of AI on knowledge work. With the help of this grant, AI@work currently involves 6 PhDs, 1 post-doc and 5 faculty working the research projects. The aim of the AI@work researchers is to contribute to an effective and responsible development, implementation and use of AI. The domains have expanded for instance to the introduction of AI for smart farming, elite sports, international recruitment, and in radiology departments in hospitals. Unique to the groups' research is that it builds new theories by generating in-depth insight in both the technology and its development, and the intricacies of the work and organizational processes under study. One of the aims is the development of a methodology for collaborative AI that bridges the divide between the development of a system and the context of knowledge work.

So far, AI@work has already generated substantive scientific and societal impact. It is resulting in top academic publications in organization studies and information systems (e.g. Organization Science and MIS Quarterly),[5,6] and

'For the PhD candidates it is encouraging to see that their work can not only **contribute to the highest scientific standards,** but at the same time have societal impact'

publications in application domains, such as radiology,[7] exemplifying the multidisciplinary nature and relevance of the research. The international AI@Work conference organized in Amsterdam in March 2020 was highly effective in bringing together researchers and practitioners (https://ai.reshapingwork.net/). Research findings have also resulted in a practitioner-oriented book on managing AI,[8] offering recommendations for managing the implementation of AI in an effective yet responsible way. The book reinforced attention for AI@work research.

AI@work researchers have engaged with society through advisory boards (e.g. the 'Digital Future' committee advising Dutch Parliament and the AI Coalition Human Capital), interviews, professional publications, blog posts, pod-casts, invited key-notes (e.g. at DNB, the Dutch AI coalition, radiology conferences, HR events), training programs, and in-house workshops. This engagement with organizations and practitioners results in new research opportunities. For the PhD candidates it is encouraging to see that their work can not only contribute to the highest scientific standards, but at the same time have societal impact. This combination is very attractive for prospective PhD candidates.

5 Pachidi, S., Berends, H., Faraj, S., & Huysman, M. (2021). Make way for the algorithms: symbolic actions and change in a regime of knowing. Organization Science, 32 (1), 18-41.

6 Van den Broek, E., Sergeeva, A. and Huysman, M. (forthcoming). When the machine meets the expert: An ethnography of developing AI for hiring. Management Information Systems Quarterly.

7 Olthof, A.W., van Ooijen, P.M.A., and Mehrizi, M.H.R. (2020). Promises of artificial intelligence in neuroradiology: a systematic technographic review. Neuroradiology 62 (10), 1265-1278.

8 Waardenburg, L., Huysman, M. and Agterberg, M. (2020). S.L.I.M. Managen van AI in de praktijk: Hoe organisaties slimme technologie implementeren. Mediawerf, Amsterdam. (English edition to be published by Edward Elgar).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