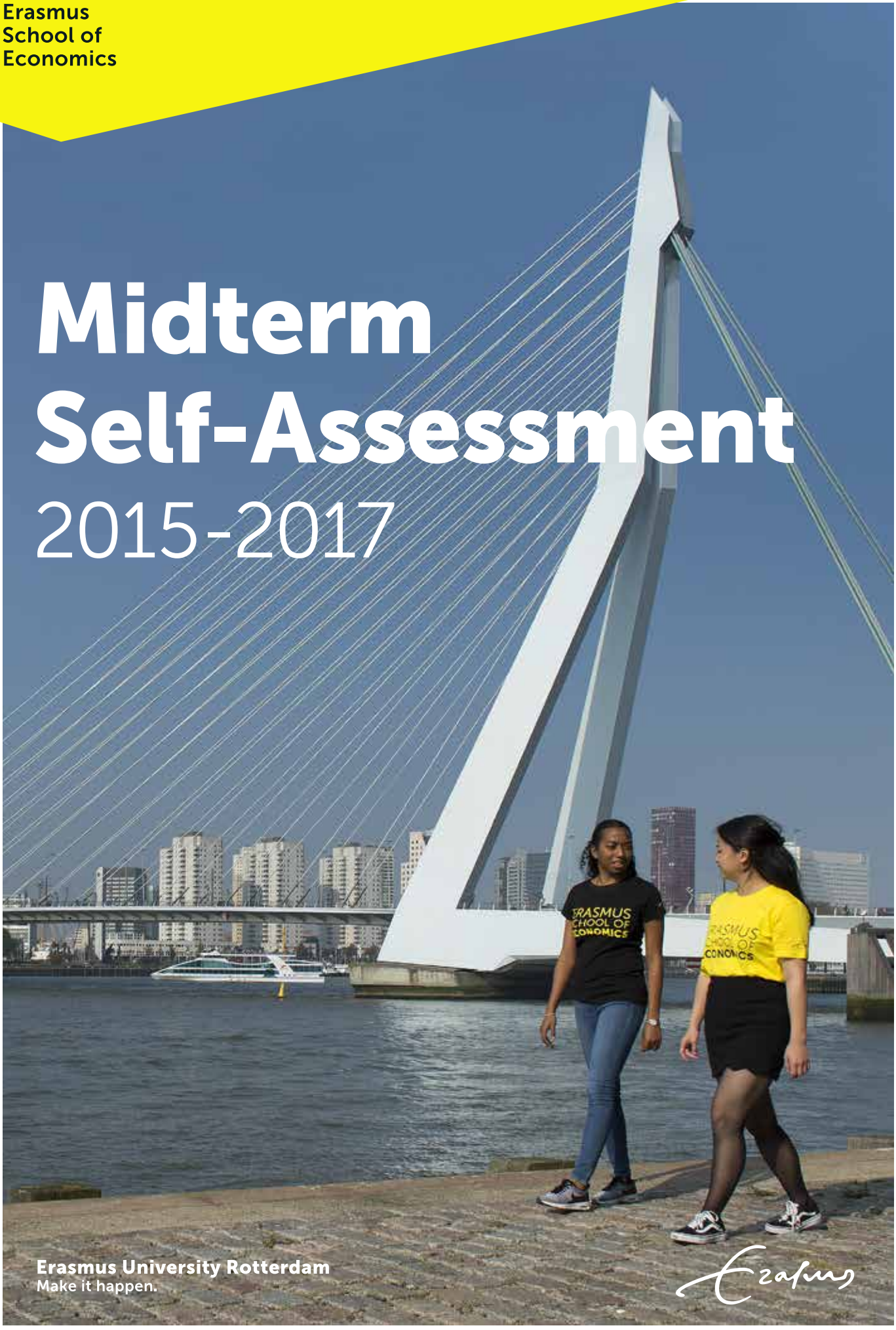
Erasmus
School of
Economics

Midterm Self-Assessment

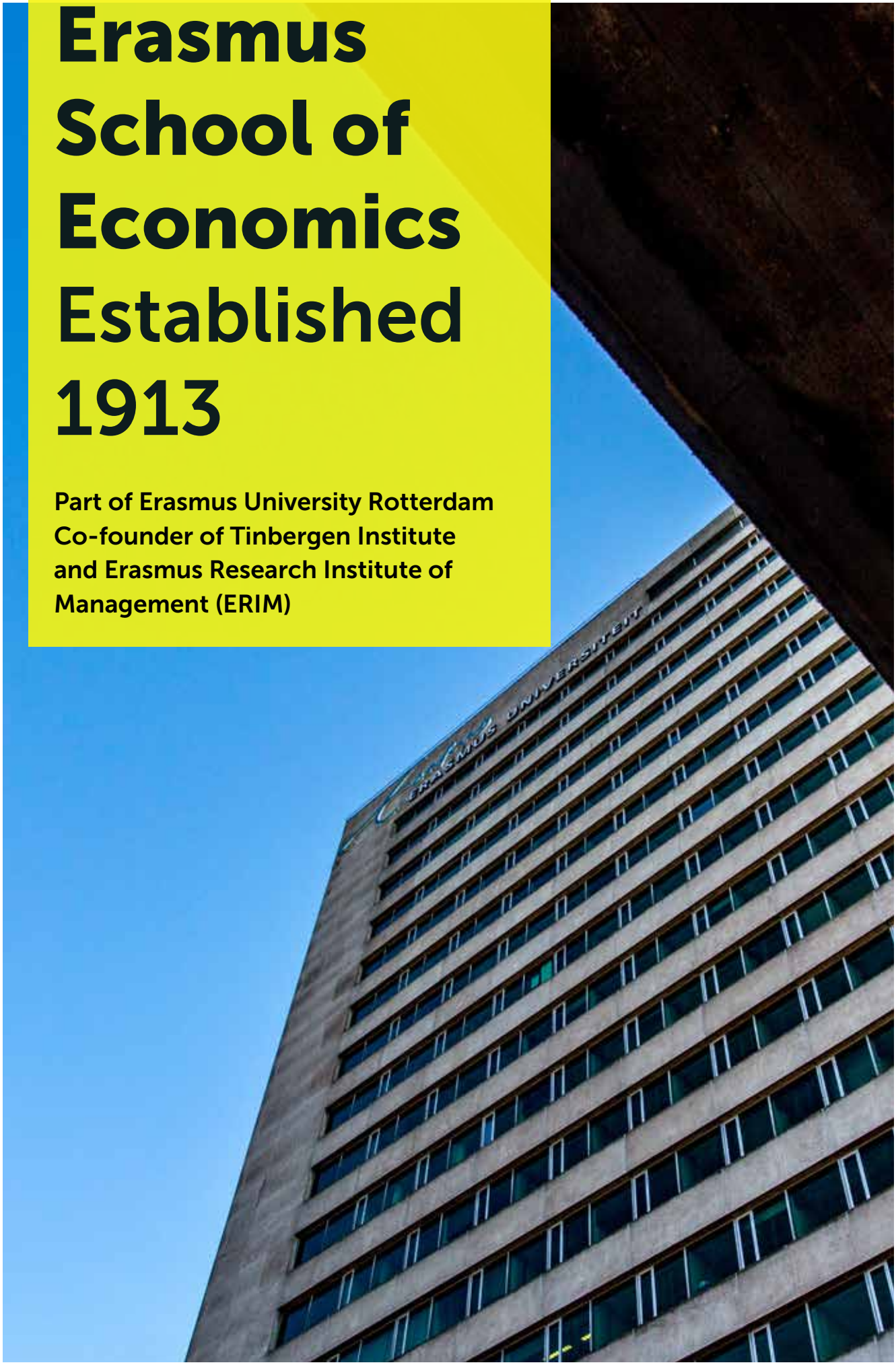
2015-2017



Erasmus University Rotterdam
Make it happen.

Erasmus School of Economics Established 1913

Part of Erasmus University Rotterdam
Co-founder of Tinbergen Institute
and Erasmus Research Institute of
Management (ERIM)



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Introduction

In September 2015, an international committee led by Professor Arie Kapteyn assessed the quality, impact and viability of Erasmus School of Economics' research, based upon the Standard Evaluation Protocol (SEP). The committee made some recommendations to further improve the quality of the research of Erasmus School of Economics. Based upon these recommendations, and the five next steps outlined in the underlying self-assessment, the school made a plan for improvement.

At the end of 2018, a mid-term review is carried out to assess the progress on the five next steps and the current research quality.

This report contains the self-assessment of Erasmus School of Economics, for its research in the years 2015-2017. The self-assessment is somewhat more concise than it would be if it were for an actual full scale review. We have focused on the state of affairs concerning the five next steps. The following topics will be discussed at school-level: organisation, strategy and objectives, results, societal relevance, PhD education, scientific integrity, diversity and viability. At research programme level we discuss the improvements made, based on the five next steps and its influence on research quality and impact. In addition, a description of strengths and weaknesses and a societal impact narrative is provided for each research programme.

Part 1: The institute

Organisation

Research at Erasmus School of Economics covers topics in economics and business economics. The school is organised into four departments: Applied Economics, Business Economics, Econometrics and Economics. Each of the departments has its own research programme. However, the largest department, Business Economics has organised its research into two separate research programmes (Finance & Accounting and Marketing). The five research programmes are:

1. **Applied Economics**
2. **Econometrics and Management Science**
3. **Economics**
4. **Finance & Accounting**
5. **Marketing**

The Dean holds ultimate responsibility for Erasmus School of Economics as a whole and is assisted by the Dean of Research to ensure the implementation of the school's research strategy. However, the departments have sufficient room to manoeuvre in accordance with their specific requirements. Day-to-day management of the research programmes is in the hands of research programme leaders.

There are two research institutes to facilitate the research activities of the School: Tinbergen Institute (TI) and Erasmus Research Institute of Management (ERIM). These research institutes function as graduate schools as well. TI is a joint effort of Erasmus University Rotterdam, University of Amsterdam and VU University Amsterdam and focuses on economics, finance and econometrics. ERIM is a joint effort of Erasmus School of Economics and Rotterdam School of Management. ERIM's focus is on business and management.

Composition of faculty

Recruitment and career development of the research staff are crucial success factors and much effort is put into hiring excellent researchers and helping them to flourish at Erasmus School of Economics. We aim for a dynamic research environment with faculty members who have an extensive international network.

Important elements of our hiring policy are:

- We focus on training highly talented young researchers and helping them to find a research position at a highly-ranked institution after their PhD graduation.
- When hiring new faculty all research programmes actively recruit on the various international job markets. We actively search for female talent, to create more balance in the gender composition of the research staff.
- In principle, we focus on hiring junior staff on a tenure track basis (assistant professor-level) and we invest in the development of faculty members. In this way, we can guarantee enough tenured positions for incoming faculty. However, we still hire established senior researchers who can complement our research profile. Examples are the appointments of Professor Jan van Ours in 2016 and Professor Olivier Marie in 2017.

Table 1 shows the level of input (in FTE) for research at Erasmus School of Economics during the years 2015-2018. In this table research effort for tenured and non-tenured faculty is calculated at 40% of the appointment at Erasmus School of Economics, as the other part of their working time is devoted to teaching. For PhD students, research effort is 80% of their appointment. From 2014 to 2017 fewer PhD students were hired to preserve a balanced budget. As budget and reserves have substantially increased, the number of PhDs has increased in 2018 and is expected to continue to increase. During the previous evaluation period (2008-2014), there was a growth at the level of assistant professors as result of the introduction of the tenure track in 2009. This has resulted in an increase of associate professors as of 2015, because of tenure trackers actually obtaining tenure.

	2014	2015	2016	2017	2018
Full professor	9.5	10	10	10.7	10.5
Associate professor	8.5	9.6	12	13.9	13.6
Assistant professor	24.4	24.6	21.5	19.8	21.1
PhD student	61.2	49.5	44.5	43.7	47.3
Total	**103.6**	**93.7**	**88**	**88.1**	**92.5**

Table 1: Available research effort per year (in FTE).

Table 2 provides information about the age and gender distribution of research staff. With regard to gender, women are fairly represented in lower ranks, but not yet in the higher ranks.

	Age group	Male	Female
Full professor	25-35	3	0
	36-45	11	0
	46-55	9	1
	56-64	8	0
Subtotal		**31**	**1**
Associate professor + endowed professor	25-35	18	5
	36-45	17	3
	46-55	3	0
	56-64	2	0
Subtotal		**40**	**8**
Assistant professor	< 25	1	0
	25-35	28	15
	36-45	8	4
	46-55	0	0
	56-64	3	0
Subtotal		**40**	**19**
PhD student	<25	30	12
	25-35	11	12
Subtotal		**41**	**24**
Total		**152**	**52**

Table 2: Research staff divided by age and gender (reference date: 31-12-2017).

There is one female full professor, Robin Lumsdaine. Mary Pieterse-Bloem was appointed as professor of practice as of 1 September 2018. Furthermore, we have three female endowed professors: Kirsten Rohde, Vardit Landsman-Schwartz and Stephanie von Hinke.[1]

Almost half of the academic staff is non-Dutch: in 2018 54,4% of the academic staff was Dutch, 25,6% international coming from within the EER, and 19,9% international coming from outside the EER.

Strategy and objectives regarding research

Based upon the recommendation of the previous evaluation committee, Erasmus School of Economics has set the following priorities for research:

1. **To increase the number of individuals and teams who are widely recognised as outstanding in their area of research.**

Important elements of this strategy are:

- to put more emphasis on producing high quality papers;
- to develop much stronger ties with leading US schools;
- to increase the appeal of the doctoral training and enhance the placements of PhD students;
- to obtain extra research funding.

2. **To enhance impact and relevance of our research output and academic performance by connecting with the media and by cooperating with the business community, social organisations, government institutions and society.**

Important elements of this strategy are:

- research connected to the UN Sustainable Development Goals (SDGs): Erasmus School of Economics invests €5 million euros in research connected to the SDGs in the coming five years.
- improving communication about our research: Professor Sandra Phlippen was appointed as an assistant professor of science communication (0.2 FTE) in 2018.

3. **To create an appealing research environment for all research staff, including tenure track staff.**

1. The European Economic Association does not make any difference between endowed professors or full professors. Following this reasoning, Per september 2018 Erasmus School of Economics has five female professors in place. Table 2 does show otherwise, because, formally, endowed professors are listed as associate professors, although they do have all the rights of a full professor. In 2018, there are 48 associate professors in total, of which 17 are endowed professor. The actual number of professors (both endowed and full professors is thus higher than listed in table 2).

Results

Research output

Table 3 below shows the number of academic publications per year per publication type. The number of academic articles has decreased slightly compared to the previous reporting period (2008-2014).

	2014	2015	2016	2017
(Refereed) Articles	170	144	153	152
Books	4	1	2	2
Book chapters	10	15	13	17
PhD-theses	31	21	26	23
Conference papers	16	7	9	2
Total	**231**	**188**	**203**	**196**
Professional publications [2]	32	27	23	14
Publications aimed at the general public	41	30	10	15

Table 3: Number of publications per publication type

Tables 4 and 5 show the results of a stronger focus on the quality instead of the quantity of publications. This reflects in a higher percentage of articles in 1st quartile journals and/or in journals with a high Article Influence Score (AIS), compared to the previous evaluation period. [3] [4]

	2014	2015	2016	2017
1st	70	64	70	92
2nd	64	39	50	38
3rd	17	24	17	11
4th	5	4	5	2
Total	**156**	**131**	**142**	**143**

Table 4: Number of publications per 5-year Impact Factor quartile.

	2014	2015	2016	2017
1	33	39	57	57
2	47	31	34	34
3	33	19	22	22
4	17	10	9	11
5	8	7	6	4
6	8	12	6	6
7	8	4	2	0
8	0	5	2	3
9	0	5	4	0
10	0	1	0	0
Total	**155**	**133**	**142**	**137**

Table 5a: Number of publications per AIS-decile.

	2014	2015	2016	2017
5 %	26	23	35	34
10%	7	16	22	23

Table 5b: Number of publications in top 5% and top 10% journals (based on AIS)

Funding

Since the previous review, Erasmus School of Economics has dedicated itself to obtain extra research funding. In order to achieve this, the school pursues a grant strategy which closely aligns with the overall strategy of 'quality before quantity':

- dedication to grants that leverage research excellence in economics;
- a focus on personal grants;
- make full use of opportunities to obtain other types of funding to leverage excellent research.

Support for researchers applying for grants is provided by a Funding Manager Research (1 FTE), who supports faculty and management throughout the whole grant application process. In addition, Erasmus School of Economics runs two financial incentive schemes to incentivize researchers to apply for external funding: the Application Bonus and the Prep Money Research scheme.

2. The registration of publications in the categories 'Professional publications' and 'Publications aimed at the general public' is not managed in the regular quality assurance cycle at Erasmus School of Economics. The number of publications listed within these categories could therefore be lower than the actual production.
3. Table 4 only refers to refereed articles listed in Thomas Reuters' Journal Citation Reports (JCR). The totals mentioned in this table are consequently lower than the totals mentioned in table 2. A journal belongs to the 1st quartile when the journal's Impact Factor is such that it ranks in the highest quartile of the most relevant JCR Subject Category (averaged of the last five years), etc.
4. Table 5 only refers to refereed articles published in journals on the ERIM and TI journal list for which the Article Influence Score is known.

In 2015-2017, €3.982.450 in total was awarded to Erasmus School of Economics from different funding schemes for personal grants and two consortia grants. This is less compared to the preceding years, 2012-2014, when a total of €6.395.354 was obtained. This is partly caused by an ERC starting grant of 1.5 million that was awarded to Professor Aurélien Baillon in 2014.

Grant	2015	2016	2017
NWO-Veni (€250,000)	Niels Rietveld	Edith Leung	Rogier Quaedvlieg
NWO-Vidi (€800,000)		Anne Gielen	Olivier Marie
Marie Curie-Sklodowska Individual Fellowship (€165,000)			Andrea Naghi
NORFACE Grant (€525,000)		Hans van Kippersluis	

Table 6: awarded personal NWO and EU grants 2015-2017

Competition in the grant area is growing rapidly. We are currently submitting more grant applications compared to previous years and we select stricter on the quality of the researcher who submits. However, the ever increasing competition is hard to beat. All research programmes actively encourage their researchers to apply for personal grants. This strategy is working out well for our junior research staff. Junior and incoming staff are highly qualified and therefore we have a strong body to apply for the more junior grants (NWO Veni and Marie Curie-Sklodowska Individual Fellowship (Marie Curie IF)). To illustrate this: in 2017 we had nine applicants for the NWO-Vidi scholarship (2018 round), of which four made it to the interview rounds, resulting in a grant for Professor Olivier Marie. For the 2019 round of the NWO-Veni scholarship (which this year runs in a pilot with a pre-proposal), eight researchers have submitted a proposal. In the European Union H2020 scheme nine researchers have applied for a Marie Curie IF. Furthermore, Erasmus University Rotterdam has an EUR Fellowships Scheme, which aims to provide recently graduated and talented researchers with more assurance in their academic career. This fellowship (€135.000-€150.000) is an extra encouragement in trying to obtain external financing, as it focuses on researchers who have submitted a proposal for a NWO-Veni, NWO-Vidi or ERC Starting grant, but did not receive this in spite of good evaluations. In 2015, Professors Thomas Peeters and Chen Zhou were granted the EUR Fellowship, as well as Professors Remy Spliet and Wendun Wang in 2016.

We have some concerns however when it comes to grants for senior researchers, such as the NWO-Vici and the European Research Council (ERC) grants. The competition in ERC evaluation panel 1 (Individuals, Institutions and Markets, Social Sciences and Humanities) is very strong, which limits the number of eligible candidates within the school. In this panel only four ERC grants were handed to Dutch institutions since the start of this grant in 2007. Almost thirty percent of the ERC grants is awarded to researchers of UK institutions. Private institutions, such as Bocconi University, also have better track records (Bocconi has obtained eight ERC Starting Grants, two ERC Consolidator Grants and nine ERC Advanced Grants since 2007). Within The Netherlands, Erasmus School of Economics is not doing too badly in this panel, as we obtained one of the four of the ERC grants awarded to Dutch researchers (an ERC Starting Grant for Aurelien Baillon in 2014; furthermore an ERC Consolidator Grant was awarded to former Erasmus School of Economics researcher Philipp Koellinger). However, we would like to increase the number of applications for senior grants and will work on a strategy to tackle this issue in the coming years. In this light, the new open competition grant of the NWO will offer more chances for senior researchers. In 2018 we have submitted one ERC Advanced proposal.

Societal Relevance

Erasmus School of Economics wants to increase opportunities to create relevance through research. The school's strategy on societal relevance includes the following aspects:

Creating impact through relevant research topics

In the years 2018-2022 Erasmus School of Economics will invest 5 million euros in research that addresses the Sustainable Development Goals. All five research programmes (Applied Economics, Econometrics, Economics, Finance & Accounting and Marketing) have started research projects related to the Sustainable Development Goals. These research projects will run for five years and we expect that they will become a significant opportunity to create relevance for society through our research. Further, an important aspect of these projects is to embed the new research insights in the school's research and teaching in a structural manner. Two examples of these research projects connected to the SDGs:

- **Rescource Management at Marie Stopes International by Professor Albert Wagelmans.** Marie Stopes International (MSI) is an International Humanitarian Organisation that provides family planning and reproductive health care services. The aim of this project is to develop models and tools for MSI to support the efficient allocation of its resources such that overall effectiveness is maximized. A PhD student will be hired and the project will run in cooperation with the Humanitarian Research Group at INSEAD (Harwin de Vries & Luk Van Wassenhove). The project addresses the following Sustainable Development Goals: No Poverty, Gender Equality and Decent Work & Economic Growth.
- **Topics in Gender Equality by Assistant Professors Andrea Naghi and Anna Baiardi.** The researchers will set up a line of research containing projects on migration and gender equality of non-migrants in India; effect of historical migration on gender roles in China; experimental research on interactions with the opposite gender, and research on the effect of marriage and labour market perspectives for women. The project addresses the following Sustainable Development Goals: Gender Equality, Quality Education and Decent Work & Economic Growth.

Erasmus School of Economics is also involved in the Erasmus Initiative 'Smarter Choices for Better Health', which aims to contribute to better health worldwide by promoting smarter choices. This initiative is a multidisciplinary project of Erasmus School of Economics, the Department of Public Health at Erasmus MC, and Erasmus School of Health Policy and Management (ESHPM). Researchers of Applied Economics (Health Economics) play an important role in this project, for example Associate Professor Hans van Kippersluis who is dedicated to the topic of 'disease prevention'. His research for the initiative focuses on smoking and overweight and how to encourage people to live a healthier life.

We are actively exploring further avenues for interdisciplinary research in for example the field of data science and the cross-over between economics and law, but these are currently at a very early stage and may take some time to materialise, if at all. We have already done some groundwork to create opportunities for interdisciplinary research by allowing a mix of publications from both in- and outside the economic domain, for example in the journal **Nature**, to be taken into account when deciding on promotions for our faculty.

Next to these projects, many researchers are also personally involved in research that is highly relevant for society. To name just a few examples: the research of Professor Frank van Oort on the effect of the Brexit on the United Kingdom and Europe (in a consortium granted by the Economic and Social Research Council of the UK); the research of Assistant Professor Sophie van der Zee on victims of cybercrime (for which she received a Police & Science grant of €46.852 in 2018), and the research of Professor Jeroen Suijs on financial transparency in the medical sector.

Creating impact by informing and involving the public

We encourage our faculty members to be active in international policy discussions, to be visible in public debates on current affairs and to write articles in professional journals or for the popular press and media. An example is the research on pension funds by Assistant Professor Aleksandar Andonov, which has received much attention from the press, such as The Wall Street Journal, and was awarded by the International Centre for Pension Management (Research Call 2017). Closer to home, researchers as Professor Bas Jacobs, Professor Peter Kavelaars and Professor Casper de Vries regularly participate in public debates, influencing the outcome by tapping into their vast stores of expertise.

It is expected to see some results in the near future from our decision to hire Professor Sandra Phlippen as Assistant Professor of science communication in the form of a research line on this topic and increased visibility of our research.

Creating impact by contract research

An important way to transfer knowledge is through contract research. Erasmus School of Economics has the following affiliated companies, in which faculty members participate to share their knowledge and are members of the supervisory board:

- Erasmus Academie BV
- Erasmus Centre for Urban, Port and Transport Economics (Erasmus UPT) BV
- Erasmus Q-Intelligence BV
- Erasmus Research and Business Support (ERBS) BV
- Erasmus SmartPort Rotterdam (ESPR) BV
- EURAC BV (ESAA)
- Fiscaal Economisch Instituut (FEI) BV
- Institute for Housing and Urban Development Studies (IHS) BV
- Instituut SMO BV
- SEOR BV

Creating impact by sharing expertise

We encourage our faculty members to contribute to society by participating as expert in advisory committees for government policy or corporate strategy, such as the Netherlands Bureau of Economic Policy Analysis (CPB) where Professor Robert Dur and Professor Dinand Webbink are current academic partners. A recent regional example is the cooperation with the city of Rotterdam in writing the 'Economische Verkenning Rotterdam 2018', for which Professor Frank van Oort and Assistant Professor Nicola Cortinovis wrote essays. Similar work has been done for the city of The Hague, the Province of South-Holland and the national Ministry of Internal Affairs. Sharing our expertise can also have global impact, for example by our contribution to the KidsRightsIndex, which we compile together with the KidsRights Foundation and International Institute for Social Studies (ISS). This annual global ranking maps how countries adhere to and are equipped to improve the rights of the child. We share a lot of our expertise with society through PhD students who decide to pursue a career outside academia. The rigorous methodological schooling received at Erasmus School of Economics and personality-building experience of writing a PhD thesis can be of tremendous value to organisations in the private of public sector.

PhD programme

The PhD programme is designed to train outstanding students for careers in research and teaching at academic institutions all-around the world. Each research programme has several openings for PhD positions per year, depending on the budget of the department. Training, support and research facilities are organised by the two Graduate Schools, ERIM and Tinbergen Institute.

Since the previous assessment, an improvement plan has been made to optimise the organisation of the PhD programme. This has led to improvement of the procedures around recruitment, application and hiring of PhD students.

Furthermore, as of September 2018 a fulltime PhD Officer is hired to further improve the PhD programme. The main focus of the PhD Officer is on the selection and placement processes and guidance of PhD students during the programme.

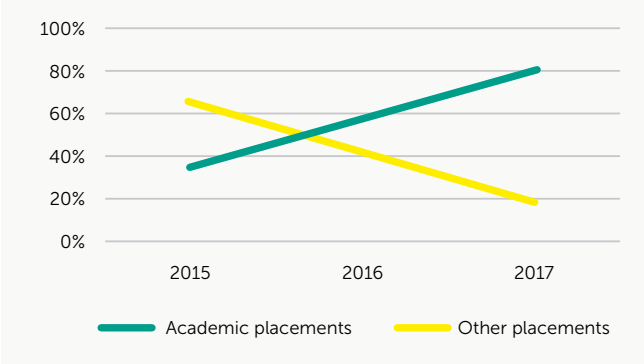
The past few years, we have been successful in attracting graduates of the TI Mphil in Economics, mainly for the Applied Economics and Economics research programmes. For Econometrics, Finance & Accounting and Marketing, it is more difficult to make a match with MPhil students. We are therefore currently creating a new research master, Data Science for Business, together with UvA and VU, which will suit the needs of these research programmes much better. Table 7 provides information about the graduation numbers of PhD students.

Cohort	Number of PhD students	Graduated in year 4 or earlier	Graduated in year 5	Graduated in year 6	Graduated in year 7	Graduated after 7 years	Graduated	Not yet finished	Drop-out
2008	17	5	4	4	0	1	14	1	2
2009	22	1	12	3	1	1	18	2	2
2010	25	7	6	3	3	0	19	5	1
2011	30	7	14	5	0	0	26	3	1
2012	27	4	9	2	0	0	15	7	5
2013	15	2	4	0	0	0	6	7	2
2014	14	0	0	0	0	0	0	12	2
2015	18	0	0	0	0	0	0	18	0
2016	12	0	0	0	0	0	0	12	0
2017	19	0	0	0	0	0	0	19	0

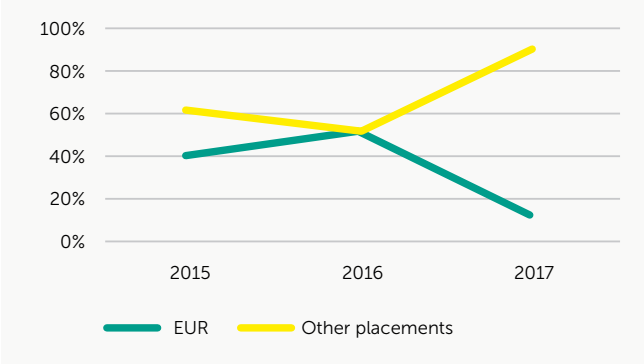
Table 7: Results PhD students

Following the advices of the previous assessment panel, more attention has been given to placement of PhD graduates. PhD students are actively encouraged to enter the international job market. Supervisors as well as the graduate schools pay ample attention to the preparation for this job market. Students receive training, for example via mock interviews or writing workshops, and budget to attend international conferences and job markets. Meetings with the supervisor and the doctoral directors are scheduled towards the end of the contract to discuss the student's job market perspectives and to arrange adequate support for the students' objectives. If necessary, very promising students can be offered a contract extension, to enable them to finalise their job market paper.

The first results are positive, although only based on two years, as can be seen in graph 1 and 2.



Graph 1: placements by category



Graph 2: internal and external placements

In the previous reporting period (2008-2014), 52% of the PhD students pursued a career in academia. In 2017, 80% of the placements were in academia and more students accept positions at other universities, not only in The Netherlands, but at schools abroad as well.[5] Two examples of top recent placements:

- Didier Nibbering (Econometrics and Management Science) became assistant professor at Monash University after his graduation in 2018. His job market paper developed Bayesian estimation methods to deal with large choice sets. In a high-dimensional empirical application, Nibbering examined how preferences for holiday destinations differ across households.
- Bruno Jacobs (Econometrics and Management Science) became assistant professor at the Robert H. Smith Business School of University of Maryland after his PhD graduation in 2017. In his dissertation, entitled 'Marketing Analytics for High-Dimensional Assortments', he introduced new research methods that enable marketing analytics using data from (very) large product assortments that consist of (tens of) thousands of products.

PhD students are encouraged to apply for grants and a successful example is Bastian Ravesteijn (Applied Economics), who was awarded a Harkness Fellowship by the Commonwealth Fund in 2015 of US $119.000 to spend up to 12 months in the United States, conducting original research and working with leading U.S. health policy experts. This enabled him to start as a Commonwealth Fund Harkness Research Fellow at Harvard University after his PhD graduation in 2015.

Although the first results of the new placement strategy are promising, we still see room for improvement. The challenge is not only to make sure that PhD graduates start an academic career at a good institution, but also to see whether more students can find their way to tenure track positions instead of postdoc positions in the future as well. Although we focus on academic placements, we provide every PhD student, including the ones unwilling or unable to pursue a career in academia with the assistance and support outlined above to secure a fitting first placement, for example through the activities of our PhD officer.

5. All recent placements can be found on our website: https://www.eur.nl/en/ese/research/phd/phd-placements

Scientific Integrity

Erasmus School of Economics endorses the Code of Conduct for research of the Association of universities in the Netherlands (VSNU) and the revised code of ALLEA, the federation of Academies of Science and Humanities in Europe. Professor Patrick Groenen (Director of the department of Econometrics) acts as Scientific Integrity Confidential Adviser of the Woudestein Campus, and employees and others can approach him with questions and concerns on scientific integrity, suspicion of violation of scientific integrity or misconduct. At the university level a permanent Scientific Integrity Committee has been installed, which handles complaints concerning violations of scientific integrity by employees. Anyone is entitled to submit a complaint to the Committee, whether or not via the Executive Board or the Confidential Advisor. The PhD programmes pay attention to Scientific Integrity as part of their skill trainings as well. All new staff at Erasmus School of Economics briefly meet the Confidential Advisor during an introduction meeting. Between 2015 and 2017 there were no cases or complaints concerning the violation of scientific integrity at Erasmus School of Economics.

Research Data Management

Good data management practice is an important research skill. To provide all faculty with adequate support, a data steward has been appointed (together with ERIM) to provide advice and support on all aspects of research data management, throughout the research data life cycle, in accordance with international RDM standards. Faculty members can receive individual support of the data steward, but can also participate in trainings at university level. A webpage with information, tools and templates is available as well.

Ethics review

The school has two internal review boards in place, together with ERIM: one for experimental research and one for non-experimental research. All research conducted at the Erasmus Behavioral Lab requires approval by the Board for Experimental Research. Other researchers can request a review as well, for example to meet the requirements for a grant application.

Privacy

Erasmus School of Economics is compliant to the General Data Protection Regulation (GDPR) of the European Union. A dedicated privacy officer was appointed in 2018 to make sure that all processes in the organisation are GDPR-proof. Individual researchers who have questions about privacy aspects of their research can turn to the privacy officer for guidance and information. Furthermore, the university frequently organises trainings and meetings about privacy.

Diversity

Erasmus School of Economics has an Action Plan Diversity & Inclusion, which runs from 2017-2020. The action plan focuses on: education and students, research and personnel & organisation. The main challenge that the school faces is to encourage a greater percentage of excellent female students to pursue an academic career and to encourage women to stay in academia. In 2016, the Athena Award for the stimulation of female talent at Erasmus University Rotterdam was awarded to Sascha Krijger (former head of the Dean's office at Erasmus School of Economics), for promoting female talent at Erasmus School of Economics through the Mature Talent project and other initiatives. We try to create inspiring female role models for our young faculty and (PhD) students by recruiting talented female professors and provide them with the opportunities to climb the academic ladder and by nominating our female faculty for academic marks of recognition (awards, prizes, etc.).

Two diversity officers have been appointed to implement the action plan and a budget of 2.8 million in total is available. The school has installed a Female Sounding Board who advises the diversity officers. An example of a recent initiative of the diversity officers is the creation of a Female Professor Network. The main goals of this network are to support and inspire female colleagues, and encourage more contact and collaboration across departments within the School. And as of fall 2018, several implicit bias trainings will be organised, for e.g. the members of our advisory councils and for upper management. Furthermore, the school has installed dedicated rotating chairs for female professors. These chairs are currently occupied by:

- Professor Stephanie von Hinke (University of Bristol), Applied Economics
- Professor Teri Lombardi Yohn (Indiana University), Accounting

Finally we have changed to composition of our Council for the Appointments and Promotions from all-male to a more diverse group and have changed the criteria for promotion to allow our faculty to combine their academic work with giving care to young children or old family members.

Viability

The overview set out below reflects upon the strengths and weaknesses, as well as the opportunities and threats that may be associated with the mission, objectives and strategic choices of Erasmus School of Economics.

Strengths (internal organisation)	Weaknesses (internal organisation)
A stable environment, committed to continuously improve its research	Relatively few faculty with a PhD from a leading US university
Coherent research programmes of significant size, with global visibility and standing	Remunerations possibilities remain limited compared to top schools abroad
High proficiency in a quantitative approach to economics, across the school	Limited ability to place PhD graduates in tenure track positions at leading schools abroad
A large number of graduate students in specialised areas of economics (such as health economics, policy economics and econometrics)	For business economics in particular salary remains an issue when competing with offers from business schools
A financially sound organisation	Relatively few applications for advanced grants
Opportunities (external context)	**Threats (external context)**
Room for more diversity in staff composition, which would lead to more productivity (as current research indicates)	Increased competition for grant applications
Room for more cooperation with other schools at Erasmus University Rotterdam, and with schools and institutions in The Netherlands as well as abroad	Increased competition on the job market, especially when it comes to hiring young research talent

Many of the topics discussed above (societal relevance, integrity, research data management, diversity) are also being worked on at university level. For every topic we try to strike a balance between participating in and providing our expertise to university-wide projects and establishing our own practice, tailored to our way of working and our field. Currently personnel of Erasmus School of Economics is participating in:

- The formulation of the university's strategy for the period 2019 – 2024.
- Experimenting with new ways to provide IT services to our faculty (together with Rotterdam School of Management, the University Library and the university's Chief Information Officer.
- Implicit bias training and workshops for academic integrity for academic leaders.

Part 2:
Research programmes

In the following chapters we provide an overview of our research programmes. We highlight the current research strategy, list key publications, discuss the way we create societal impact and reflect on the future viability of the programme. We conclude every chapter with an overview of current strengths, weaknesses, opportunities, threats and a detailed example of how our research helps with creating societal impact.

Applied Economics

Focus, strategy and objectives

The research programme Applied Economics helps to shape the profile of Erasmus School of Economics, as it aims to contribute to the development of new and fundamental fields in economics and to be active in areas of high societal relevance. Being an incubation centre implies that the resources of the department adapt to where fundamental innovation can be expected. This relates to both teaching and research. Fascinatingly, fundamental novelty and societal relevance often overlap.

Currently, the research programme consists of three groups: Behavioural Economics, Health Economics and Organisation, Strategy and Entrepreneurship. We are working on integrating these different themes and to expand into other emerging areas of high scientific promise and societal relevance. One example is the Erasmus Initiative 'Smarter choices for better health' where health economics and behavioural economics collaborate. Joint with limited liability companies affiliated with the university, initiatives have been undertaken around happiness economics, urban economics and development, and the economics of humanities.

Behavioural Economics

Economic analysis has been dominated by the neoclassical paradigm of human rationality. Behavioural research has shown that people often violate the basic tenets of rationality in predictable ways. Incorporating these insights have led to a behavioural revolution and the replacement of homo economicus by homo sapiens. The Behavioural Economics group's research concentrates mainly on decision under ambiguity (probabilities unknown) and intertemporal choice. The particular strength of the group is that it can both do sophisticated theoretical research and experimental and field research. The interplay between these types of research leads to new models of decision making that better describe real-world behaviour.

Health Economics

Health Economics is an important new area of Applied Economics in which fundamental developments and societal relevance come together. Core topics of the Health Economics research programme include the theoretical and empirical explorations of the causes of social inequalities in health and inequities in health care access. This includes econometric analyses of health care utilisation as well as of behaviour more generally, including the linkages between health and labour force participation. Collaboration between members of the Applied Economics group has been awarded a prestigious NORFACE grant (€525.000) to explore gene-environment interactions in the generation of health and education inequalities. Next to this, the Health Economics group is strongly involved in the Erasmus Initiative 'Smarter choices for Better Health'. Amongst others, this has resulted in the appointment of two visiting professors in the field of Health Economics from international top institutes; Professor John Cawley (Cornell University) and Professor Sam Harper (McGill University).

Organisation, Strategy and Entrepreneurship

Organisation, Strategy and Entrepreneurship covers areas of Applied Economics where strategic decision making of firms, entrepreneurs, innovators and consumers are central. Increasingly focussing on the micro-level of decision making processes, theoretically and empirically the research in this discipline addresses crucial sorting, heterogeneity and causality issues of productivity, entrepreneurial opportunities and employment in relation to contexts of sectors, cities and regions, trade, foreign investment and institutions. By nature this is highly policy-relevant, as industry and urban level policymakers increasingly make well-informed and evaluated decisions on investments and economic goals. Recently, research projects explicitly reflect on United Nations Sustainable Development Goals, strategic investment agendas of cities and regions, Urban Europe JPI, and implications of system-changing shocks (e.g. Brexit in the United Kingdom).

Synergies between research groups

Many synergies exist between the three groups, as well as between the Department of Applied Economics and the other departments of Erasmus School of Economics. For example, health insurance take-up in developing countries is often low because people have distorted beliefs about their probability of ill-health. Dealing with such distorted beliefs is part of the toolkit of behavioural economics and these insights may in turn lead to higher health insurance coverage and improvements in social welfare. Health also interacts with urban contexts, strategic management with urban productivity premiums, behavioural research with well-being, and foreign investments with the industrial organisation and institutions in host economies, to name a few.

Research quality

Our group's focus on innovative topics and societal relevance has paid off as evidenced by its success in external grant applications in recent years (REI, Erasmus Initiative, ERC Starting Grant, NORFACE, Netspar, Marie Curie, NWO-Veni, NWO-Vidi, NWO-Vici, JPI Urban Europe, ESRC). In order to sustain a leading position in the field, we intend to leverage the vast experience in obtaining these grants by helping young and talented researchers to submit new and innovative grant applications. The quality of our research group is not only indicated by the number of publications in top (field) journals, but also by citation rankings of key authors, placements of our PhD students at other very good universities (e.g. Bocconi, Harvard, Nottingham, Warwick, UCLA) and (editorial) board positions (e.g., Management Science, Journal of Health Economics, Cambridge Journal of Regions, Economy & Society).

To further stimulate young talent we will regularly invite top researchers for presentations and visits and increasingly appoint world class scholars to long term visiting positions. Visiting professors in the period 2015-2018 were Drazen Prelec (MIT), Titus Galama (University Southern California), Stephanie von Hinke Kessler Scholder (University of Bristol), and John Cawley (Cornell University). High quality organised workshops were 'Bayesian Crowd workshop' (with researchers from MIT, Harvard, & Calltech, among others, 2017), RGHI workshop: 'Strategies towards Universal Health Coverage: African experiences' (2015) and NORFACE workshop, 'Gene-Environment Interplay' (2018).

As young talent has grown into more senior positions, we expect a growing impact of our research by a further increase in citations, better placements of (PhD) students, and more positions on (editorial) boards. The researchers are embedded in the research schools Tinbergen Institute and ERIM.

Key publications

The programme's most important publications over the period 2015 - now (ordered by last name):

Attema, A.E., Bleichrodt, H., Gao, Y., Huang, Z. & Wakker, P.P. (2016). Measuring Discounting Without Measuring Utility. *American Economic Review 106* (6), 1476-1494.

Baillon, A., Huang, Z., Selim, A., & Wakker, P.P. (2018). Measuring Ambiguity Attitudes for All (Natural) Events, *Econometrica* (forthcoming).

Baillon, A. (2017). Bayesian Markets to Elicit Private Information. *Proceedings of the National Academy of Sciences*, vol. 114:30, pp. 7958–7962.

Galama, T.J., and Van Kippersluis, H. (2018), A Theory of Socioeconomic Disparities in Health over the Life Cycle, *The Economic Journal*, (forthcoming).

Gerritse, M. and Rodrigues-Pose, A. (2018), Does Federal Contracting Spur Development? Federal contracts, income, output and jobs in US cities. *Journal of Urban Economics* (forthcoming).

Hessels, J. Rietveld, C.A., Thurik, R. and Van der Zwan, P. (2018). Depression and Entrepreneurial Exit. *The Academy of Management Perspectives, 32* (3), 1-17.

Karreman, B., Burger, M.J. and Van Oort, F.G. (2017). Location Choices of Multinationals in Europe: the Role of Overseas Communities. *Economic Geography,* 93 (2), 131-161.

Limwattananon, S., Neelsen, S., O'Donnell, O.A., Prakongsai P., Tangcharoensathien V., van Doorslaer E.K.A., Vongmogkol, V. (2015). Universal coverage with supply-side reform: The impact on medical expenditure risk and utilization in Thailand, *Journal of Public Economics* 2015, 121, 79-94.

Picchio, M., Suetens, S. and Van Ours, J.C. (2018). Labor supply effects of winning a lottery, *Economic Journal*, 128 (611), 1700-1729.

Witte, C.T., Burger, M., Ianchovichina,E. and Pennings, H.P.G. (2017). Dodging Bullets: The Heterogeneous Effect of Political Violence on Greenfield FDI. *Journal of International Business Studies*, 48 (7), 862-892.

Relevance to society

Health economics, behavioural economics, and entrepreneurship and strategy are all areas of research with high societal impact and this impact is likely to increase in the coming decade. Increasing health expenditures and the changing market for health care have fuelled research in health economics. The realisation that people's preferences are often unstable and that they can be nudged in the direction of socially desirable behaviour, has led to a strong increase in policy attention for behavioural economics, and the surge in innovation and new business formation has led to an increased interest in the economics of entrepreneurship and strategy. As many investments and developments cluster in selective cities and regions, national and devolved policymaking is served by applied yet theoretically well based research. Other areas where our group has societal impact is in the measurement of happiness and the inclusion of moral values into economic modelling.

While our group's focus has largely been on academic research, we are increasingly involved in policy advice, for example the Brexit advices for the UK government to mitigate its expected impacts, fostering economic development in the cities of Rotterdam and The Hague, prioritising economic planning initiatives in the province of South-Holland, economically transforming the port of Rotterdam, and assessing possible employment and skills impacts of a circular economy. We expect that this interaction with society will increase. In order to remain our independent positions, this interaction will predominantly take place through the limited liability companies affiliated with the university (Institute for Housing and Urban Development Studies, Erasmus Centre for Urban, Port and Transport Economics) and through advisory positions in the city of Rotterdam, Smartport or (nationally) Platform31. As a result of this interaction, our group will ensure working on themes that are highly actual and will have access to new and unique data sources.

Viability

Our group has initiated new teaching programmes that are popular amongst students, for example in Behavioural Economics. The next plan is to start a major in Behavioural Health Economics. As a result, we will be able to continue growing and manage to attract more talent from which we can source new PhD students. Indeed, through the recent successes in grant applications we have hired many new PhD students and postdocs. Incoming junior staff members are encouraged to apply for grants themselves, for example Marie Curies. Recently, Applied Economics was awarded two LEaDing Fellowships from the European Horizon 2020 COFUND programme. As also current senior staff will continuously submit grant applications, we expect our research group to still keep growing in the near future. At the same time, due to increased cooperation with the Erasmus Holding companies and other external parties (e.g. World Bank), additional funding will become available for recruiting ambitious young staff members.

Strengths and weaknesses

Strengths (internal organisation)	**Weaknesses (internal organisation)**
Talented and dedicated research staff	Research links to high-quality US universities
High quality publications on focused subjects	Research links to Asian universities
Synergies within own research group	Number of advanced grants
Commitment to research programmes	Social media participation
Well-valued educational programmes	Placement of PhD-students on tenure tracks
Expansion due to internal and external funding	
PhD-placement in top-functions (non)academic	
Editorial board and societal advisory positions	
Increasing societal impact	
Open and active research culture	
Opportunities (external context)	**Threats (external context)**
Synergies between research groups within the School	Competition on labour market for talent
Increase research visits from expert fellows	Competition for high-impact projects
Increasing demand for applied economic projects and know-ledge	Polarizing and subjective policy environments
Big data availability and applica-tions	
Post-graduate education	
Synergies with Rotterdam School of Management and Tinbergen Institute	

Impact narrative: how risk-averse are Belgian investors?

At a large Belgian bank, KBC, the Head of Innovation in asset management wondered how risk- averse his clients really were when it came to their investment preferences. Are clients aware of their attitude toward risks, he wondered? Would a more precise insight in how clients perceive risks enable the bank to tailor investment advice to a clients' individual preferences?

With these questions in mind the Head of Innovation at KBC contacted Professor Han Bleichrodt at Erasmus School of Economics, of whom he had read a number of studies on this matter.

Professor Bleichrodt has since long studied how people, when faced with uncertainty, assess risks. People do not assess risks the way traditional economic theory would predict, he concludes. Traditionally, economists assume that, when faced with such uncertainty, investors will act according to Expected Utility Theory. Simply stated, the decision maker is assumed to place subjective values (or "utilities") on all potential monetary outcomes that can occur, determine the subjective likelihood for each possible outcome, and choose the course of action with the highest expected utility.

Empirical research, however, shows that actual behaviour deviates sharply from this traditional account of risky choice. Behaviour seems to be better captured by Cumulative Prospect Theory, a psychological model of decision-making co-developed by Nobel laureate and Erasmus honorary doctor Daniel Kahneman. A crucial aspect of this theory is loss aversion: the assumption that people are more sensitive to losses than they are to commensurate gains. Both laboratory and field studies provide qualitative evidence that investors are indeed loss averse.

Bleichrodt and his fellow researchers have introduced a novel method to measure loss aversion under uncertainty at the individual level. For KBC bank, the gathering of evidence for the importance of loss aversion in financial decision making, was exactly what they were looking for. A first step in the collaboration between Professor Bleichriodt's research team and KBC bank was to develop a gamified app to measure the loss aversion of the bank's client base (in addition to the more traditional risk aversion measures).

Over the past year, Professor Han Bleichrodt's team and KBC co-developed this app, and it has been launched in test form to a subset of 4,000 clients in March 2018. At this point, data are collected completely anonymously and the app strictly serves as an educational tool to help clients gain insight about how they themselves feel about gains and losses when making investment decisions. If the test is deemed successful, however, concrete investment advice on the basis of measured loss aversion of clients would be a natural next step.

Econometrics and Management Science

Focus, strategy and objectives

Econometrics

The research in this theme focuses on data-driven econometric research using advanced statistical methods and techniques. The goal of this research is to push the state of the art in econometrics and machine learning techniques, to provide economic agents, including policy-makers, firms and investors, with quantitative support to make the best possible decisions. More specifically, the mission of the research area is to develop sound methodological procedures for different key aspects of such decision-making problems, including data collection, econometric model specification, parameter estimation, model evaluation, and forecasting. The research is typically on the cutting edge in terms of existing econometric and machine learning techniques. The main fields of application are:

- Macroeconomics (real-time data & expert forecasts);
- Finance (high frequency data);
- Marketing (databases of firms & forecasts by managers, internet data).

It is expected that the amount of data that will become available for business and research will continue to increase in the near future, e.g. due to the expected 100 billion devices that will be connected to the 'Internet of Things' in 2020. This will provide an almost unimaginable amount of heterogeneous data on a real-time basis. At the same time, the information content per observation will probably decrease. In such an environment new econometric methods and models are needed to extract signals from the noisy data. Advanced computational techniques are needed to process the large quantities of data. The econometrics area intends to keep on playing an important role in developing advanced econometric methods and models to prevent a data deluge.

Management Science

The aim of this research theme is to be at the academic forefront of the developments in transportation, logistics and supply chain management in interaction with business intelligence systems, and to make major contributions to both management science and management practice. Particular topics of interest are:

- Service, reverse and green logistics: the goal is to improve logistics after a product sale (service logistics) and when it is discarded (reverse logistics and circular economy), next to improve sustainability of all logistics activities;
- Transportation optimisation: the goal is to improve the performance of passenger and cargo transportation systems, in particular Dutch Railways and Port of Rotterdam;
- Health care optimisation: here we develop models and methods to increase efficiency in health care institutions and to increase the quality of care;
- Business intelligence systems: This concerns the application of information and communication technologies and advanced computational methods for improving decision making in business economic domains.

While our research is often motivated by real-world applications, its focus is on the development of new analytic approaches to advance science and society. This usually entails building new mathematical models and/or developing new solution methods or methodologies. In our view, each of the topics mentioned above will remain relevant and challenging in the coming years.

The research programme is part of the research programmes of the research schools Tinbergen Institute and ERIM.

Research quality

From 2015 onwards, the main change is in staff is that the number of PhDs has gradually decreased from 17 to approximately 14 FTE. Since 2017, the department reserves 4 internally financed PhDs a year. Together with externally financed PhDs, we aim for at least 20 PhDs. The programme explicitly aims at higher impact journals. In the period 2015-2017, the average number of top 10% articles per year was 7.7. This is an improvement from an average of 5.4 over 2008-2014, even though the number of first quartile papers has remained the same (on average 23 articles per year). This result suggests that our policy of trying to publish in journals with the highest impact seems to be effective.

In 2018, Erasmus University Rotterdam was ranked first in the Top 25 European Schools for Supply Chain Management Research. The SCM Journal List ranking is an annual ranking of universities' supply chain management research output in the leading supply chain management journals, based on publications during the prior five years.

Key publications

The programme's most important publications over the period 2015 - now (ordered by last name):

Alfons, A., Croux, C & Filzmoser, P., (2017), Robust Maximum Association Estimators, *Journal of the American Statistical Association*, 112, 436-445.

Einmahl, J., De Haan, L. & Zhou, C. (2016). Statistics of heteroscedastic extremes. *Journal of the Royal Statistical Society. Series B. Statistical Methodology*, 78 (1), 31-51.

Pince, C., Frenk, J.B.G. & Dekker, R., (2015). The Role of Contract Expirations in Service Parts Management. *Production and Operations Management,* 24, 1580-1597.

Van den Burg, G.J.J. & Groenen, P.J.F. (2016). GenSVM: A Generalized Multiclass Support Vector Machine. *Journal of Machine Learning Research,* 17, 1-42.

Van Dijk, D.J.C. & Opschoor, A., (2017), New HEAVY models for fat-tailored realized covariances and returns, *Journal of Business & Economic Statistics,* to appear.

Veelenturf, L.P., Potthoff, D., Huisman, D., Kroon, L.G., Maroti, G. & Wagelmans, A.P.M. (2016). A Quasi-Robust Optimization Approach for Crew Rescheduling. *Transportation Science,* 50 (1), 204-215

Initiatives to increase research quality

Several initiatives have been taken to increase the quality within our research programme.

To increase the quality of our papers, we have organised research meetings were researchers can ask colleagues for feedback on their research. These meetings are attended by all staff members in a certain field including PhD students.

To broaden our research agenda, we have hired more theoretically oriented tenure trackers (Maria Grith, Andrea Naghi, Mikhail Zhelonkin & Krzysztof Postek) from the international job market to increase the probability to get publications in the top journals in the field. The extension of staff has also resulted in a decrease in the high teaching load of the group, which is caused by a tremendous increase in the number of students in the last couple of years. Furthermore, we have hired full-time Professor Ilker Birbil and a tenure tracker (Annika Schnuecker) to increase our strength in machine learning techniques useful for econometrics and operations research. Finally, we added Professor Chen Zhou and tenure tracker Phyllis Wan to the staff to increase our strength in probability theory.

To increase ties with US schools we have undertaken several strategies. First of all, we try to get our PhD students placed at US universities and we were successful with one of our students (Bruno Jacobs was placed at the University of Maryland). Second, we have been very active on the international job market. Although it is very hard to hire excellent researchers who graduated from a leading US school (they get very high salary offers from US schools which we cannot match), we are sometimes successful in hiring PhD students form leading US schools (e.g., Phyllis Wan (Columbia)) and also manage to hire European PhD students with good contacts with US schools on our tenure track positions. We also hired female Professor Robin Lumsdaine on a part-time base. She is also associated with the American University and has an extensive US network. Recently, we hired Professor Michel Wedel (University of Maryland) on the part-time Theil Chair. He has an extensive network on US business schools. Also, several faculty members hold positions in editorial boards, for example Professor Dick van Dijk, who is editor of the *International Journal of Forecasting*, and Professor Michel van der Wel, who is associate editor of *Statistica Neerlandica.* Finally, we have organised several specialised three day workshops centred around key note speakers from US schools, like Christopher Sims (Nobel Laureate), Alan Timmermann (UCSD), Trevor Hastie (Stanford) and Guido Imbens (Stanford), and a workshop focused on robust statistics with world leading experts (Xuming He (University of Michican), Elvezio Ronchetti (University of Geneva), Roger Koenker, (University of Illinois Urbana-Champaign), Peter Rousseeuw (KU Leuven)).

We have increased our efforts in preparing PhD students for finding a job on the international market by helping them to write single-authored papers and by arranging research visits in the US. The job market placement has been one of the most important topics in the Progress and Development talks. We see that more PhD students are preparing to go on the international academic job market and we had successful placements at the University of Maryland, Oxford University, INSEAD, Monash University, Alan Turing Institute London, Loyola University Chicago and the University of Amsterdam.

The group has focused more on applying for grants. Several researchers have prepared or are preparing proposals for NWO grants (Veni, Vidi, Vici). Unfortunately, in recent years two Veni grants (Remy Spliet and Wendun Wang) and three Vidi grants (Andreas Alfons, Chen Zhou, and Michel van der Wel) were all rejected in the last round. The Vici proposal (Dennis Fok), a H2020 consortium application for a Marie Curie ITN and an NWO gravity proposal (Rommert Dekker) were unfortunately equally not successful. Although the group secured a REI proposal (Roy Thurik, Patrick Groenen, Tiemeyer, Franken), a Dinalog proposal (Remy Spliet,

Rommert Dekker), a NWO TKI Dinalog Physical Internet Travel Grant (Shadi Sharif Azadeh), a SMARTPORT project (Rommert Dekker) and a Marie Curie (Andrea Naghi), we still need to increase the success rate of our applications.

Finally, we have started to obtain extra funding from post-graduate teaching and consultancy via Erasmus Quantitative Intelligence. In 2017, this already has led to the financing of one additional post-doc researcher. It is the intention to make this type of extra funding permanent so that it can be used to increase the quality of the research group. Furthermore, the participation of the group in the Centre for Maritime Economics and Logistics and limited liability company Erasmus Academie has also led to the equivalence of two partially sponsored PhD positions.

Relevance to society

As an example of direct societal impact of our quantitative approaches is the research of Professor Dennis Huisman for adapting train scheduling under the prediction of extreme weather. The goal is to minimise delays for passengers while trying to keep as many train lines open as possible, by reducing cascading effects of delays. The Dutch Railways (NS) has implemented an adapted train schedule and used it several days last winter.

A second example of societal impact is a study of Professor Richard Paap for the Van Gogh Museum in Amsterdam, through Erasmus Quantitative Intelligence. They are interested in hourly predictions of visitors queuing for the cashier. A prediction model was set up that also allows to study the effect of policy changes. As a result, the queuing times have diminished and a better spread of visitors over the day has been obtained.

Viability
Strengths and weaknesses

Strengths (internal organisation)	Weaknesses (internal organisation)
Good staff quality with many different and partly overlapping specializations.	Teaching load still too high due to increase in the number of students.
Successful hires from the international job market has increased the diversity.	Teaching staff needs to be adjusted to the preferences of students with respect to master specialisations. Difficulty recruiting qualified staff with statistical knowledge of machine learning.
Quality of the group is broad and does not depend on a small number of researchers.	Relative small number of PhD students given size of research group.
No financial problems allowing for rapid expansion of staff.	Too few associate professors.
Strong potential for synergy between research groups.	
Opportunities (external context)	**Threats (external context)**
Availability of knowledge to contribute to increase in statistical treatment of machine learning techniques in economics.	Majority of funding based on number of students (which is an uncertain factor).
Position core research as data science.	Success rate of grant applications is too low.
Strong quality of PhDs could lead to better placements.	Success rate of tenure trackers is too low.

Impact narrative: optimising stocking of airplane parts at Fokker

Modern-day airplanes are complex machines: built out of innumerable components, each in turn made up of a vast number of smaller parts. Inevitably, over time these components need to be repaired or replaced. The repair of such airplane parts is one of the many services provided by Fokker, the renowned aerospace company. Aside from the required precision and intricate co-ordination, the repair must also be executed as quickly as possible in order for Fokker to maintain a competitive advantage and a good reputation amongst clients.

Ten years ago, Erasmus School of Economics carried out the first investigation into predicting demand for spare parts. The positive outcome of that initial research eventually led to the company's involvement with the Service Logistics Forum. Fokker, together with Erasmus University Rotterdam, the universities of Twente and Eindhoven, and twelve other companies, came together to collaborate on the subject of service logistics.

At the beginning of the process, faulty components undergo inspection in order to identify which parts need replacement. Hence, the crucial issue Fokker needed to resolve was estimating the most optimal number of spare parts to keep

in stock. If even just one part is missing, it must be ordered, thereby delaying the entire repair process. This creates bottlenecks that can significantly slow down the repair and negatively affect customer satisfaction.

Yet in practice, the repair shop could not realistically keep all potential spare parts in stock. Stocking too many parts in advance can be costly and inefficient. Availability of parts is further complicated by the fact that often, one part may be used in multiple components. Both of these factors needed to be taken into account in designing an efficient inventory system.

This is where the subsequent research, led by Professor Rommert Dekker and his PhD student Willem van Jaarsveld, came into play. In order to provide Fokker with a most optimal stocking advice they employed various analyses. First, different repair types were classified by usage probability and quantity of each piece-part in a given component. For repairs of a specific component type, a probability distribution was then estimated based on past repairs. This data was then extrapolated in order to give the repair shop an idea of which repairs are the most common, thus determining the spare parts most in demand and how many should be stocked.

The researchers optimised the repair shop turnaround times by employing a new algorithm, focusing at the level of individual piece-parts and how they are relate to each other as opposed to entire components. By initiating this more wholesome target, the technique allowed for a wider range of important variables to be examined, and hence, offer a more accurate prediction.

Fokker then implemented this approach, and it indeed proved to be fundamentally superior to common industry practice. A component-oriented part fill rate of 95% turned out to be 36% more cost efficient than a standard individual part fill rate of 98%, while providing the same service. This signified a strong competitive advantage for Fokker, whereas the repair shops were able to introduce either significant savings or substantial speed improvements.

The collaboration between Fokker and Erasmus School of Economics has proved to be highly successful and beneficial for the company. Fokker recorded a notable increase in customer satisfaction, and hence, improved performance.

Findings which resulted from the collaboration between Fokker and Erasmus School of Economics have been published in:

Willem van Jaarsveld, Twan Dollevoet and Rommert Dekker (2015): Improving spare parts inventory control at a repair shop, *Omega*, 57, Part B, 217-229. doi:10.1016/j.omega.2015.05.002

Ward Romeijnders, Ruud Teunter and Willem van Jaarsveld (2012): A two-step method for forecasting spare parts demand using information on component repairs. *European Journal of Operational Research* 220(2), 386-393. doi:10.1016/j.ejor.2012.01.019

Li, X., Dekker, R., Heij, C. and Hekimoğlu, M. (2016), Forecasting End-of-Supply Risk of Spare Parts Using the Proportional Hazard Model, *Decision Sciences,* 47(2), 373–394.

"The method has a positive impact on sales, as it allows us to better guarantee that we deliver [to] our customers what they expect."

Maarten van Marle,
Managing Director of Fokker repair shop

Economics

Focus, strategy and objectives

The research programme Economics has a long-run focus on raising the quality of our research output. We aim for quality over quantity in research. The research programme aims to create an environment for excellence that is constructive-critical and allows for risk-taking.

Our research programme explicitly supports innovative, high-risk lines of research. Members of our programme are encouraged to work on research projects that have the potential to deliver papers that could be published in the top-5 journals (*Quarterly Journal of Economics, American Economic Review, The Journal of Political Economy, Review of Economic Studies, Econometrica*). However; we are realistic, this strategy involves a substantial degree of risk-taking, the likelihood to publish in these journals is simply low. But, aiming for publication in these journals will mean that papers that in the end do not get published there, should have a good chance of being published in other high-ranked general interest journals (*American Economic Journal, Journal of the European Economics Association, The Economic Journal, Review of Economics and Statistics*) or in top-field journals.

Research quality

The research programme explicitly aims to promote a research culture where research is extensively discussed among colleagues. The brownbag seminar of the programme is very important in this respect. It is the central place to pitch new research ideas and to promote internal constructive-critical research feedback. On top of this, specialised workshops and informal meetings are important for exchanging research ideas.

Another linchpin in the programme is the tenure track system, where young academic talents are recruited on the international job market. The research programme has been very active in this respect in recent years, and we have been very successful in attracting good tenure trackers from top economics departments in Europe. In years to come, the research programme will gradually harvest on these recruitment efforts as some of the tenure trackers will get tenure and establish themselves as internationally renowned researchers. The programme is active and supportive in facilitating the international exchange of its members.

Furthermore, the programme regularly hosts well-established scholars for longer research visits, or as part of research workshops/conferences organised by members of the research programme and the 'Tinbergen Research on Monday' seminar. A detailed list of workshops/conferences (co-) organised by members of the department, and of international researcher visits can be found in the two tables below:

Workshops/conferences
2015
Workshop European Monetary Forum
Workshop Political Economy (EPEW)
2016
Workshop Political Economy (EPEW)
Workshop Discrimination at Work
Workshop Prosocial Motivation at Work
2017
Workshop Political Economy
Workshop The Economics of Scientific Research
Workshop Recognition at Work
Workshop International Production Networks
Workshop Accounting and Economics
Workshop Public Finance
2018
Workshop Political Economy
Workshop New Developments and Intergenerational Mobility
Annual conference Tinbergen Institute 'International Trade and Development'

Table 8: workshops and conferenced organised by the Economics research rogramme

International researcher visits, 2015-2018	
Arthur Silve	Assistant professor, Université Laval, Canada
Lorenzo Ductor	Senior Lecturer, Middlesex University London
Tomasso Reggiani	Research Associate, Masaryk University Brno, Czech Republic
Xiaolei Cumperayot	Chulalongkort University, Bangkok, Thailand
Arvind Magesan	Associate professor, University of Calgary, Canada

Table 9: international researcher visits

Finally, several faculty members hold positions in editorial boards. Professor Dinand Webbink is a co-editor at *Economics of Education Review*, and several faculty members hold associate editor positions (Professors Robert Dur, Bas Jacobs, Otto Swank, Casper de Vries).

The research programme is highly committed to promoting diversity in gender, ethnicity and race. In the future, we expect a substantial number of females to be promoted to professor. In the period 2015-2017, all three tenure trackers promoted to associate professor were female (Anne Gielen, Laura Hering and Dana Sisak). And, of the tenure trackers

that we hired on the job market in that same period, 50% was female. Furthermore, gender equality is an important research topic in which several researchers are actively involved, such as Anne Boring, Robert Dur and Josse Delfgaauw.

The research programme is active in providing core and field courses in the MPhil programme of the Tinbergen Institute. By being visible in the TI, our programme has been able to attract several strong PhD students.

In the near future, we want to continue our efforts to strengthen the cooperation of our researchers with leading scholars at top-ranked universities. A stronger international orientation and international exchange will be beneficial for the development of our researchers, by establishing an international network and through joint research efforts the quality of their research output can increase. Furthermore, we will focus more on the placement of our PhD graduates at high-ranked universities, as we believe that there is room for improvement in this regard.

Key publications

The programme's most important publications over the period 2015 – now (ordered by last name).

Top economics journals

E.M. Bosker, H. Garretsen, G. Marlet & C. van Woerkens (2018). Nether Lands. Evidence on the price and perception of rare natural disasters. *Journal of the European Economic Association,* forthcoming.

C. Bradler, A.J. Dur, S. Neckermann & J.A. Non (2016). Employee Recognition and Performance: A Field Experiment. *Management Science,* 62 (11), 3085-3099.

J.J.A. Kamphorst & O.H. Swank (2016). Don't Demotivate, Discriminate. *American Economic Journal. Microeconomics,* 8, 140-165.

S.V. Kapoor & A.N. Magesan (2018). Independent Candidates and Political Representation in India. *American Political Science Review*, forthcoming.

O.R. Marie & A. Chevalier (2017). Economic Uncertainty, Parental Selection, and Children's Educational Outcome. *The Journal of Political Economy,* 125, 393-430.

O.R. Marie & U. Zoelitz (2017). High Achievers? Cannabis Access and Student Performance. *Review of Economic Studies*, 84, 1210-1237.

A.P. Markiewicz & K.L. Lansing (2017). Top Incomes, Rising Inequality, and Welfare. The Economic Journal, forthcoming. J. Morgan, D. Sisak & F. Várdy (2017). The Ponds Dilemma. *The Economic Journal,* forthcoming

O.H. Swank & B. Visser (2015). Learning from others? Decision rights, strategic communication, and reputational concerns. *American Economic Journal. Microeconomics*, 7, 109-149.

S. Akcomak, H.D. Webbink & B. ter Weel (2016). Why Did the Netherlands Develop So Early? The Legacy of the Brethren of the Common Life. *The Economic Journal*, 126, 821-860.

J. van Erp, F. van Gastel & H.D. Webbink (2017). The Effect of Media Exposure of Suspects on Solving Crime. *The Economic Journal,* 127, 547–570.

Top field journals

A. Boring (2017). Gender Biases in Student Evaluations of Teaching, *Journal of Public Economics* 145, 27-41.

E.M. Bosker & E. Buringh (2017). City seeds: geography and the origins of European cities. *Journal of Urban Economics*, 2017, Vol.98, pp.139-157.

Delfgaauw, J., A.J. Dur, A. Non & W. Verbeke (2015). The Effects of Prize Spread and Noise in Elimination Tournaments: A Natural Field Experiment. *Journal of Labor Economics*, 33(3), pp. 521-569.

A. Erbahar & Y. Zi (2017). Cascading Trade Protection: Evidence from the US. *Journal of International Economics*, 108, 274-299.

A.A.F. Gerritsen (2017). Equity and efficiency in rationed labor markets. Journal of Public Economics, 153, 56-68. A.A.F. Gerritsen (2016). Optimal taxation when people do not maximize well-being. *Journal of Public Economics*, 144, 122-139.

A.C. Gielen, C. Myers & J. Holmes (2016). Prenatal testosterone and the Earnings of Men and Women. *Journal of Human Resources*, 51 (1), 30-61.

Jacobs, B., E.L.W. Jongen & F. T. Zoutman (2017). Revealed Social Preferences of Dutch Political Parties, *Journal of Public Economics*, 156, 81-100.

P. Denter & D. Sisak (2015). Do Polls Create Momentum in Political Competition? *Journal of Public Economics*, 130 (October), 1-14.

X. Gabaix, D. Laibson, D. Li, H. Li, S. Resnick, and C. de Vries (2016). The impact of competition on prices with numerous firms. *Journal of Economic Theory*, 165, 1-24.

Relevance to society

The focus of the Economics' department is on research and education. The department aims to contribute to society by educating students. It is the department's view that excellent researchers raise the quality of our education. On top of this, some members of the research programme are very active in (international) policy discussions and highly visible in public debates on economic matters. The programme will promote the policy and social impact of its academic research even more by strengthening the incentives to disseminate policy and socially relevant research output. In the future, the programme aims to raise the social and policy impact of its research by more actively collaborating with the communication department of Erasmus School of Economics to make press releases when journal articles or working papers are published that have social and/or policy relevance. Below, we give four recent examples of the societal impact of our academic research:

Jacobs, Bas (2018), "The Marginal Cost of Public Funds is One at the Optimal Tax System", International Tax and Public Finance, 25, (4), 883-912.

Professor Jacobs was member of a governmental working group that advised the Minister of Finance on the question whether the deadweight loss of taxation should be added as a social cost in social-cost benefit analysis. Based on this research the Dutch government adjusted the official guidelines for social-cost benefit analysis in the Netherlands. In particular, no corrections for the deadweight losses of taxation need to be made in social cost-benefit analysis.

Robert Dur and Ben Vollaard (2017), Salience of Law Enforcement: A Field Experiment (R&R Journal of Environmental Economics and Management).

Together with a mid-sized city in the south of the Netherlands, we conduct a field experiment to examine whether the deterrent effect of law enforcement depends on the salience of law enforcement activity. Our focus is on illegal disposal of household garbage in residential areas. At a random subset of 56 locations, law enforcement officers supplemented their regular enforcement activities by the practice of putting bright warning labels on illegally disposed garbage bags. This treatment made the existing enforcement activities suddenly much more apparent to residents. We find evidence for a substantial reduction in illegal disposal of garbage in response to the treatment.

Gordon Dahl and Anne Gielen (2018), Intergenerational Spillovers in Disability Insurance (NBER Working Paper No. 24296).

We exploit the 1993 disability insurance changes in the Netherlands to explore how a parent's loss of some or all disability insurance benefits affected their children's future choices and outcomes. The societal impact narrative later in this chapter provides more details about this project.

Maarten Bosker, Uwe Deichmann and Mark Roberts (2018), Hukou and highways: the impact of China's spatial development policies on urbanization and regional inequality (*Regional Science and Urban Economics*, 71, 91-109); earlier version published as World Bank Policy Research Paper, no.7350)

We examine the spatial economic impact of China's two main spatial development policies: restricted labor mobility through the Hukou residential registration system, and the construction of a 96,000 km national expressway network (NEN). We find that these policies have shaped regional economic development and urbanization patterns across China in very different ways. The construction of the NEN has reinforced China's existing core-periphery patterns: initially lagging regions not connected to the NEN have not benefitted much from its construction. By contrast, a removal of the Hukou restrictions is predicted to result in much more widespread welfare gains, allowing all people to benefit by moving to where they are most productive. Interestingly, it would even promote urbanisation in currently lagging (inland) regions, mostly by stimulating rural outmigration.

Viability

Some members of our programme have successfully obtained external funding, most notably the NWO- Vidi Grant that was awarded to Professor Anne Gielen in 2017 for her research on welfare dependency across the generations, and the 2018 NWO-Vidi Grant for Professor Olivier Marie in 2018. We hope to improve the success rate in obtaining grants at the level of tenure track assistant professors (NWO-Veni en Marie Curie), although we realise competition is fierce in that area.

Strengths and weaknesses

Strengths (internal organisation)	**Weaknesses (internal organisation)**
Serious highly-committed research programme	Faculty members can be more active in international networks: research visits, conference/work-shop attendance, participation in international research networks (CEPR, CESifo, IZA, etc)
High-quality research, improving over time	Placement of PhD students should be improved
Gender diversity	Diversity in terms of ethnicity deserves improvement
High success rate in obtaining research grants at the senior level (NWO-Vidi)	Low success rate in obtaining research grants at the junior level
Active and lively research culture	
The department is increasingly international, hiring excellent tenure trackers from the very best departments in Europe	
Opportunities (external context)	**Threats (external context)**
Attract higher-quality internati-onal guests for short- or longer term research visits	Raise social impact / valorisation of research
	Increased competition in the international labor market for tenure trackers

Impact narrative: what happens when parents receive less social benefits?

When Professor Anne Gielen and her coauthor Gordon Dahl saw the results of their research on this question they were pretty amazed themselves. It turns out that when parents receive less money from their disability insurance, their children are somehow earning much more money later on in life. To be more specific: every €1,000 decline in disability benefits to parents translated into a boost of around €5,700 in children's future earnings.

In 1969, two years after the introduction of disability insurance in the Netherlands, 4 percent of the Dutch working age population was receiving benefits. By the late 1980s, that had risen to 12 percent. Prompted by rising costs, the government took a series of steps to reduce benefits, stiffen eligibility requirements, and transfer responsibility to individual employers.

Professor Gielen and Professor Dahl exploited the 1993 disability insurance changes to explore how a parent's loss of some or all disability insurance benefits affected their children's future choices and outcomes. The outcomes they studied were whether children claim disability benefits or other social assistance programs later on in life, what they earned and how well they were educated.

Individuals in the Netherlands receive disability insurance based on the income lost from their disability. The 1993 change affected the calculation of a potential beneficiary's "earnings capacity," resulting in fewer individuals qualifying for insurance and lower benefits for those who did. The changes affected some individuals but not others. On 12 November 1996, the Dutch parliament passed a motion grandfathering anyone between the ages of 45 and 50 into the old, more generous rules for claiming disability insurance benefits, before the re-examinations for that age group took place. This grandfathering created a cutoff in the generosity of disability insurance based on a person's age. It is exactly this change that the researchers exploit to examine how disability income receipt affects children.

Relative to the children of parents who received generous disability benefits through the 1990s, the children of parents who were no longer eligible for benefits or who received diminished benefits are less likely to make disability claims when they became adults.

In 2014, nearly 20 years after the changes, the children of parents who were subject to the tougher qualification regime were 1.1 percentage points less likely to be disability insurance claimants. Consistent with an anticipated future with less reliance on disability insurance, the children of affected parents are 2.2 percentage points more likely to finish upper secondary school.

Parental disability income receipt also affects their children's future earnings and taxes paid. Every €1,000 euro decline in disability benefits to parents translated into a boost of around €5,700 in their children's future earnings. Tax payments by these children between 1999 and 2014 rose by roughly €2,000 — 2 percent of the mean taxes paid. "*The combination of reduced government transfers and increased tax revenue results in a fiscal gain of €5,900 per treated parent due to child spillovers by 2014*" the researchers report.

On 20 October 2016 Professor Gielen was invited to present her findings at the directors-meeting at the Ministry of Social Affairs and Employment (Min SZW). One of the directors mentions that policy makers had been suspecting some trickle-down effect of social benefit claims on next generations, but so far lacked any causal evidence. This had thus far prevented any policymaking in this direction.

On 23rd of November 2016 a group of policy makers from the Ministry (SZW) visited Erasmus School of Economics for a follow up meeting. The findings of Professor Gielen and Professor Gordon's study were eventually taken into the official intergovernmental report on Disability (IBO Arbeidsongeschiktheid, *http://www.rijksbegroting.nl/system/files/12/ibo-arbeidsongeschiktheideindrapport-ibo-geschikt-voor-de-arbeidsmarkt-def.pdf pp. 67-126)*.

(This narrative builds on a summary by NBER digest author Alex Verkhivker on Professor Gielen's research)

Finance and Accounting

Focus, strategy and objectives

The research programme Finance and Accounting comprises of researchers from both the finance and accounting group. The programme aims to enhance our understanding of the functioning of financial markets, financial institutions and intermediaries, as well as the financial decision making of firms, managers and market participants. The finance and accounting group is mostly located on one floor and bridges have been built between the finance and accounting researchers, for example through research on corporate governance (e.g., executive compensation). In addition, several internal initiatives have led to the 'Erasmus Finance Group' (in cooperation with the finance group at Rotterdam School of Management, and the finance group of the research programme in Econometrics and Management Science at Erasmus School of Economics) and the 'Erasmus Accounting Group' (in cooperation with the accounting group of Rotterdam School of Management), with an increased number of meetings and presentations.

The mission of the research programme is to be one of the leading finance and accounting programmes in Europe, targeting research that is interesting for the top journals and relevant for a broad audience in the finance and accounting profession.

Research quality

The group's target is to be consistently ranked among the top European finance and accounting programmes in terms of the number of top publications.

To support research faculty in achieving the high quality research objective, the school strives for creating an excellent research environment. On the one hand, this consists of providing access to a large collection of archival financial databases and a laboratory for conducting experiments. On the other hand, it consists of financial support to attend workshops and conferences, organise high quality seminar series featuring international speakers, invite short and long term visitors (such as Professor David Yermack from NYU, who visits every year) and longer term international visits by our own faculty. This strategy is starting to pay off as evidenced by several recent top publications that are co-authored by professors at prestigious U.S. universities (such as the two forthcoming papers mentioned above).

We are putting more emphasis on getting PhD students well-prepared for the international job market, for example with international visits and mock interviews, and we expect to see the results of these efforts in terms of better placements in the next few years. Initiatives from the School and the research institutes to streamline the PhD application process have been successful.

Key publications

The group aims to publish in top finance, accounting, economics and management journals. In the period 2015-2017, the programme members published in a number of top journals, such as the Journal of Finance, Review of Financial Studies, Journal of Financial Economics. Recent key publications include (ordered by last name):

Andonov, A., Hochberg, Y., Rauh, J. (2017), Political Representation and Governance: Evidence from the Investment Decisions of Public Pension Funds, *Journal of Finance*, forthcoming.

Andonov, A., Bauer, R., Cremers, M. (2017), Pension Fund Asset Allocation and Liability Discount Rates, *Review of Financial Studies*, 30(8), 2555–2595.

Bekkum, van, S., Baltussen, G., Da, Z. (2017). Indexing and Stock Market Serial Dependence Around the World. *Journal of Financial Economics*, forthcoming.

Boudt, K., Laurent, S., Lunde, A., Quaedvlieg, R., Sauri, O. (2017). Positive Semidefinite Integrated Covariance Estimation, Factorizations and Asynchronicity, *Journal of Econometrics* 196(2), 347-36.

Busch, P. and Obernberger, S. (2017). Actual share repurchases, price efficiency, and the information content of stock prices, *Review of Financial Studies*, 30 (1), 324-362.

Decamps, J.-P., Gryglewicz, S., Morellec, E., Villeneuve, S. (2017), Corporate Policies with Permanent and Transitory Shocks, *Review of Financial Studies,* 30 (1), 162-210.

Grundy, B.D. and Verwijmeren, P. (2016). Disappearing call delay and dividend-protected convertible bonds, *Journal of Finance* 71, 195-223.

Hillert, A., Maug, E., Obernberger, S. (2016). Stock repurchases and liquidity, *Journal of Financial Economics* 119, 186-209.

Jeanjean, T., Stolowy, H., Erkens, M.H.R. & Yohn, T.L. (2015). International evidence on the impact of adopting English as an external reporting language. *Journal of International Business Studies,* 46 (2), 180-205

Korteweg, A., Kraussl, R., Verwijmeren P. (2016). Does it pay to invest in art? A selection-corrected returns perspective, *Review of Financial Studies* 29, 1007-1038.

Relevance to society

The group aims to combine quality with relevance and valorisation. The main impact on society is through the education of students. With more than 500 students in the Master program, the group makes a huge contribution to society by educating future business leaders. In addition, the Finance and Accounting group has organised highly focused conferences, and its members appear regularly in Dutch and international newspapers. An example is the research on pension funds by Assistant Professor Aleksandar Andonov, which has received much attention from the public press, such as The Wall Street Journal. One aim of these activities is to participate in public debates, for example about executive remuneration and financial performance in the health sector.

A relatively large number of members has dual appointments. This gives the opportunity to build interactions between fundamental academic research on the one hand and the (financial) industry and regulators on the other. Examples include Maarten Pronk (EY), Guido Baltussen (Robeco), Ronald Huisman (GreenEdge), Onno Steenbeek (APG), and Mary Pieterse-Bloem (ABN Amro). As an example, Professor Onno Steenbeek organises the 'Pension Days' to build a bridge between theory and practice in an area highly relevant to society. The group considers knowledge transfer as an important part of its mission.

A start has been made with the creation of a research center on equality, and panel discussions on executive compensation (with politicians, regulators, reporters, and high profile academics) and non-GAAP financial have been organized in the fall of 2018.

Viability

The master specialisation Financial Economics and the master programme Accounting Auditing and Control are the two largest master programmes in the School. The size of the programme is an important source of financing. Additionally, the group has been successful in attracting external funding. These include the highly prestigious NWO Vici and Vidi grant (still running over 2015-2017), and two newly obtained NWO-Veni grants, for Edith Leung (2016) and Rogier Quaedvlieg (2017). These grants indicate that researchers in the Finance and Accounting programme are in the absolute top of their field.

Due to the increasing student numbers and a renewed focus on top research and influential publications in high-ranking journals, we aim to increase the number of faculty through recruitment on the international job market. At the assistant professor level, this has resulted in newly recruited faculty with PhD's from universities as Tilburg, Mannheim, and Frankfurt, even though competition is fierce. Initiatives to stay competitive in our hiring attempts have been initiated. Today, the programme is a young, ambitious, and dynamic group of scholars.

Because the recent hires are mostly junior faculty, there is a relatively large proportion of non-tenured faculty. The group targets to increase viability by improving the balance between non-tenured and tenured faculty. In this respect, the accounting group has made a significant step forward by hiring a full-time senior professor. However, professors in accounting and finance are in high demand and due to the Dutch collective labor agreements, the group faces a steep challenge to compete with international salaries for finance and accounting researchers. The focus therefore is on increasing the number of tenured faculty naturally through the tenure track system. In combination with the excellent research facilities that have been created in the past, we are now starting to reap the benefits of our strategy. Four assistant professors have been granted tenure in 2015-2017, and a fifth one in the beginning of 2018, and two associate professors will be promoted to endowed professor in 2018. The finance and accounting group experiences significant turnover, losing some strong researchers to competitors during 2015-2017. This turnover delays the internal growth process to expand the senior faculty of the group.

Strengths and weaknesses

Strengths (internal organisation)	**Weaknesses (internal organisation)**
Good staff quality	Composition faculty: senior faculty underrepresented
Good team	Attracting high quality PhD students
Good infrastructure (databases, lab)	
Financially sound	
Opportunities (external context)	**Threats (external context)**
Funding available to strengthen international links e.g. through visitor program	Position in labour market; we are becoming less competitive in the international labour market
Strengthen cooperation with Rotterdam School of Management, Erasmus School of Accounting & Assurance (EURAC BV), (information) economics	

Impact narrative: do hospitals make too much profit?

It all started with a phone call from a local news reporter. She asked Professors Suijs (Erasmus School of Economics) and Verbon (Tilburg University) whether a more than 20 percent profit margin in a small local health care organisation in the east of the Netherlands was something to worry about. Could this be a sign of fraud or corruption, she wondered.

After this worrying phone call, Professors Suijs and Verbon decided to start analysing available data on health care organisations' profit margins with data of 2014 and 2015. To their surprise, health care organisations showed quite extreme variations in their profit margins. Especially amongst the smaller health care organisations profit margins would sometimes equal 20 to 40 percent of their annual sales.

These high profit margins can in theory mean two things: either these organisations are much more efficient and therefore can provide health care at lower costs than larger hospitals. Or alternatively, these organisations have lower costs because they are less likely to deliver the health care they are supposed to deliver.

Based on these first findings, which have been extensively reported on by various news media, the Dutch parliament decided to ask the Health Inspection (IGJ) to actively search through annual reports to track down potential fraud.

In April 2018 a first expert meeting was organised to learn about financial fraud amongst health care providers. Professor Suijs took part in these meetings. A second expert meeting was held in the fall of 2018. In the meantime, with the help of ongoing research journalism by Het Financieele Dagblad, additional questionable practices were revealed and the above average profit margins appeared to be just the tipping of an iceberg. In fact, some health care organisations had split their activities into a (non-profit) foundation and an actual care giving organisation. The foundation receives the budget for care giving, and outsources the actual care giving to a second organisation. Through this construction, the sub-contracting organisation does not have to comply with the rules of supervision that checks whether budgets received are actually used to provide health care. Nor do these sub-contractors have to publicly disclose financial data about their operations. Once these practices were revealed, the Parliament urged the health inspection to study these practices. So far over 200 health care institutions have been fined for financial underreporting. Suijs's findings have been one of the building blocks for seven debates in Parliament since 2016. His research is still ongoing.

Findings so far have been published in:
Suijs, J. en Verbon, H.: De winsten van zorginstellingen, Beleid en Maatschappij 2018 (45) 1, 46-77.

Marketing

Focus, strategy and objectives

The marketing group aims to be a leading marketing science group in Europe in terms of research output and impact on the theory and practice.

The group conducts research in marketing with a quantitative modeling orientation and addresses important substantive areas such as Marketing and Innovation, Marketing Decision-Making and Preference Measurement, Pharmaceutical Marketing and Marketing Models. Publications are targeted at *Marketing Science, Journal of Marketing Research, Journal of Marketing, and International Journal of Research in Marketing.*

The programme has a very active and productive research staff consisting of both more established scholars like Professors Benedict Dellaert, Bas Donkers, Dennis Fok, Philip Hans Franses, Martijn de Jong, Stefan Stremersch and Willem Verbeke, as well as mid-career scholars such as Nuno Camacho, Vijay Hariharan, and Vardit Landsman. The programme is currently restaffing its junior layer, which came at the end of a lifecycle. We have already recruited Professors Michiel van Crombrugge (Leuven) and Radek Kapienko (Vienna) last year and are presently in the market to fill several more positions in the next two to three years. International top-level visitors affiliated to the programme include Professors Roland Rust (Maryland) and Gerry Tellis (University of Southern California).

Furthermore, the programme's faculty members have been very successful in obtaining external grants supporting faculty positions, such as EU Marie Curie grants awarded to Zhiying Jiang in 2015 and Yuri Peers also in 2015, under the scientific leadership of Stefan Stremersch. An NWO-Vidi grant was awarded to Martijn de Jong for 2013-2018. A large Netspar theme grant was awarded to Benedict Dellaert and Bas Donkers in 2016 (€250,000) and several other smaller research grants have been obtained (e.g., EIT-Health and a grant of €90,000 of Adrie Bakker Stichting for Martijn De Jong's research on dark-side online behaviour).

Research quality

In the past two years, we have taken the following actions in the Marketing research programme in response to the previous research evaluation.

We have further strengthened our emphasis on high quality papers in the top journals in our field. We strongly emphasize not going for a high quantity of publications but for high quality and high impact. We also safeguard junior and tenured faculty research time to be able to do high quality work. In the next years, we plan to focus even more on hiring

and promoting talent, based on quality of publishing rather than quantity, even if it goes against the common practice in the Netherlands to make such decisions based on quantity. With respect to international orientation, many of our researchers are operating in a strong international network. They regularly publish with co-authors from leading schools in other countries such as the U.S. and have strong international ties (e.g., Columbia University, University of Maryland, University of Michigan, University of Alberta, Penn State University, New York University). Many are also on the Editorial Review Boards or are an AE at the leading marketing journals such as *Journal of Marketing, Journal of Marketing Research, Marketing Science and the International Journal of Research in Marketing.*

In the PhD programme, we have a strict selection of PhD candidates with high potential in the international market. We clearly communicate to them what the publication requirements for the international job market will be. For high-potential job candidates, we also strongly support their international job-search. International PhD placements include the University of Maryland and Penn State University.

Our recent success in personal grants from EU and NWO funding was hurt by inconsistent long-term planning regarding the future size of faculty base outside of the control of the marketing programme leaders (i.e., leading to a freeze in hiring or being allowed to hire only too late). Such inconsistent planning led to low hiring efforts and thus to low grant writing for NWO Veni and EU Marie Curie (the two most successful routes of the past). However, we have had success in applied / topic-based grants where there is a close fit with our research (e.g., Netspar, EIT – Health). In late 2017, early 2018 we were able to clarify the commitment of the Department of Business Economics and the school in general over the next 5-10 years on junior hiring, which led to an expansion of the positions we can fill. This is thanks to clarity on the growth of Business Economics, the new Data Science master and two new interconnected initiatives (the Erasmus Disruption Initiative and the Sustainable Development Goals programme in Marketing). These initiatives bring additional resources to the marketing programme, which will allow the recruiting of at least 5-6 new assistant professor or postdoc positions in marketing. Such strong recruiting, for which we are currently defining the criteria will bring a solid layer of at least 8 junior colleagues to the programme to strengthen its base and secure revival.

Key publications

The programme's most important publications over the period 2015 - now (ordered by last name):

De Jong, Martijn G., Jean-Paul Fox, and Jan-Benedict EM Steenkamp. "Quantifying under-and overreporting in surveys through a dual-questioning-technique design." *Journal of Marketing Research* 52, no. 6 (2015): 737-753.

Jacobs, Bruno JD, Bas Donkers, and Dennis Fok. "Model-based purchase predictions for large assortments." *Marketing Science* 35, no. 3 (2016): 389-404.

Kappe, Eelco, Sriram Venkataraman, and Stefan Stremersch. "Predicting the Consequences of Marketing Policy Changes: A New Data Enrichment Method with Competitive Reactions." *Journal of Marketing Research* 54, no. 5 (2017): 720-736.

Kappe, Eelco, and Stefan Stremersch. "Drug detailing and doctors' prescription decisions: the role of information content in the face of competitive entry." *Marketing Science* 35, no. 6 (2016): 915-933.

Yang, Liu, Olivier Toubia, and Martijn G. De Jong. "A bounded rationality model of information search and choice in preference measurement." *Journal of Marketing Research* 52, no. 2 (2015): 166-183. [6]

Relevance to society

Most of our research addresses issues that are of direct relevance to consumers and marketers. Many of our research projects take place in close cooperation with companies in practice. Professors Stremersch, Dellaert, Donkers, Camacho, Hariharan and Landsman work closely with several industry partners through Erasmus Centre for Marketing & Innovation (ECMI). A main purpose of ECMI is to expand on industry (co-)funded academic research and research co-creation with business in the area of marketing and innovations. Professor De Jong works with Erasmus MC on research projects on addictive consumer behavior. Professors Dellaert and Donkers work with industry in the domain of pensions and insurances, particularly in the area of risk communication and financial product differentiation. Tools to measure risk preferences are developed in cooperation with industry, and are being implemented by industry partners, such as Achmea and Robeco (see separate impact case). Professor Franses works with direct (marketing) organisations in the financial industry, like Robeco and with charitable organisations on models for prospect and customer selection. Many of the faculty regularly publish in

6. Winner Paul Green award for best paper in Journal of Marketing Research.

professional magazines and write popularizing publications (e.g., Stefan Stremersch book "Kiezen voor winst" which became a best seller; Willem Verbeke's book "De veerkrachtige professional"; Professors Dellaert and Donkers articles on consumer pension decisions. We furthermore serve society through board memberships of various professional associations (e.g., e.g. Stremersch was awarded an EMAC Fellowship, Netspar). Finally, our faculty frequently teaches in executive education programmes (ISAM, IESE, ESAA) and we give many talks for practitioner audiences.

Viability

We expect to see an increase in the supply of good PhD candidates through the new research master Business Data Science (to start in September 2019). There is an increasing demand from society as well as from students for marketing analytics, which is met by the development of this new master. However, we see several important challenges for the coming years as well.

First, we want to maintain, and where possible further expand, the current quality level of our research output. We are sensitive to recent calls (e.g., RRBM.network among others) on overemphasizing quantity of research output (e.g. bean counting publications or citations), as it leads to bad scholarly behaviours) and thus refrain from pure counting as input for decision-making. We realise this puts us at a disadvantage to other schools who increasingly attract faculty with extrinsic incentives such as bonuses. Our focus on quality calls for retaining our proven top faculty and to recruit promising new faculty members (including recruiting top PhD students to enter into the PhD programme) to further strengthen the programme and replace faculty who leave. In recruitment, we focus purely on quality (aspects such as solid training, creativity, and diversity) and not any form of quantity. To this end, we plan to consolidate our growing research funding through grants and to build a European PhD network with external cooperation.
Second, we want to focus more on fewer, high-impact projects, both in terms of academic impact and in terms of business impact. This requires a long-term orientation of our researchers in their research theme selection, focusing on high impact research, and in an effective interface with practice. In line with the policy of the school to put quality over quantity, we accept that this will lead to lower productivity as measured by mere counts of (top) publications.

Third, along with an increase in impact, we want to further increase our programme's visibility among both our peers and practitioners. Visibility among our peers should result in, for example, stronger reputational effects (e.g. on visitor programmes, strength of reputation among young recruits), increasing returns from stronger collaboration networks, and the continuation of prominent presence on editorial boards of the premier academic research journals, which is already strong. Our research visibility among practitioners should be further improved through, for example, practice publications, which can reach an even greater international practitioner audience and organising high-impact, local, events.

Strengths and weaknesses

Strengths (internal organisation)	**Weaknesses (internal organisation)**
High quality level of research.	More focus on high-impact projects is needed.
Research centers	Visibility among peers and practitioners can be improved.
Opportunities (external context)	**Threats (external context)**
Increasing demand from society and students for marketing analytics.	Competition in labour market.
Increase in supply of good PhD candidates through new research master Business Data Science	

Impact narrative: the Pension Builder

How can individuals take more responsibility for their pension investment decisions? This can be risky for both individuals and society since most citizens lack the knowledge of retirement investment. Professors Benedict Dellaert and Bas Donkers developed a research-based online tool to help individuals make easier and better pension decisions.

Individuals are increasingly asked to make their own retirement decisions based on their personal risk-return trade-offs for retirement investments. This is not an easy task. Where in the past investment decisions were largely made by professional fund managers, now more and more individuals are required to become active retirement consumers and make their own retirement investment decisions. This requirement poses a large challenge for individuals and society at large. Imagine the tremendous consequences if people collectively make bad decisions, such as investing way more risky that they can bare while hoping for maximum returns.

While Dutch pension funds, financial services firms, and insurance firms tried hard to design communication aids to help people make better decisions, it became increasingly clear that it would be inadequate. The problem was that a more accurate measure of people's preferences for different retirement investment risk-return options was needed. The ultimate aim should of course be that individuals obtain a retirement income that is as closely aligned with their risk-return preferences as possible..

Benedict Dellaert and Bas Donkers have worked with international researchers Dan Goldstein (Microsoft Research) and Carlos Lourenço (University of South Carolina – formerly Erasmus University) to develop an interactive online instrument that ensures a more refined and accurate communication between individual participants and investment product providers such as pension funds and insurance firms. This interactive tool empowers individuals to choose their own risk-return profile based on their personal preferences, while also taking directly into account the financial products that are available in the market and the projected risks and returns of these products.

In order to test and improve upon their interactive tool and to address the specific challenges posed by the retirement context, Dellaert and Donkers have worked closely with industry partners organised in Netspar, the Network of Studies on Pension, Aging and Retirement. This resulted in the "Pension Builder" tool, an interactive graphic interface that allows individual pension plan participants to directly select their most preferred risk-return distribution for retirement income, based on an underlying model of projected retirement investment product returns.

Already, one of the core impacts of the new pension tool is the fact that the concept was fully embraced by Achmea, one of the largest financial service providers in the Netherlands. Triggered by the current system changes, they have recently launched a new comprehensive and flexible retirement product. This product is directly coupled with a Pension Builder-style tool (the "Beleggingsbalans") which is seen as a major new service advantage by the firm. Other pension providers such as Robeco are also exploring the option of developing similar types of online tools.

The Pension Builder also inspired other online tools that provide a promising solution for the challenge of empowering consumers. Such tools are directly in line with the desire for individuals to be more actively involved in their pension decisions.

Findings so far have been published in:
Donkers, B., C. Lourcenço, B.G.C. Dellaert, and D. Goldstein, 2015, "Individual Investment Advice that Corrects for Probability Weighting," under second review at *Journal of Marketing Research*.

Dellaert, B., B. Donkers, M. Turlings, T. Steenkamp and E. Vermeulen, 2016, "Towards a New Approach for Measuring Risk Profiles of Pension Plan Participants," (in Dutch), *Netspar Design Paper,* 49, Tilburg: Netspar.

“Our research with Erasmus University has led to a huge improvement in the way in which we measure individuals’ pension risk preferences.

It has resulted in a new, interactive tool (the ‘Beleggingsbalans’) that is simpler to use, measures pension risk preferences more accurately, and most importantly, also helps pension plan participants develop a better understanding of the inherent risk-return trade-offs in pension investments.”

Mr. Koen Vaassen, Manager Marketing and Innovation - Retirement Products, Centraal Beheer Achmea

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