



# Annual Research report 2018



**Amsterdam School of Economics**

**PREFACE**

The 2018 annual research report of the Amsterdam School of Economics (ASE) documents the organisation, activities and results of its research institute ASE-RI. The funding of the institute provides the financial means for its staff members to write scientific papers and dissertations, attend and organise international workshops and conferences and supervise PhD students.

The ambition of the ASE-RI is for the Amsterdam School of Economics to become a European top 10 Economics department based on its research output in Micro-Economics, Macro-Economics and Quantitative Economics. The research time allocation of the members of ASE-RI is made in line with this ambition. It is therefore aligned with the Research Fellow criteria of the Tinbergen Institute. Newly recruited junior faculty start out as tenure-track assistant professors. The criteria for receiving tenure parallel those for becoming a Tinbergen Institute research fellow.

The Amsterdam School of Economics and therefore also ASE-RI pride themselves with their large number of highly qualified successful researchers whose research is documented in this yearly report.

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**A**

**THE RESEARCH INSTITUTE**

## **1. INSTITUTIONAL OVERVIEW**

### **1.1 Mission Statement**

ASE-RI (Amsterdam School of Economics Research Institute) facilitates and promotes research at ASE to foster the academic ideal of intertwined university teaching and research. The institute aims for research results that significantly improve our understanding of the operation of economic systems, the behaviour of agents in the economy and the effects of economic policies. ASE-RI aims to appraise researcher performance and to provide a directive for further research with its standards for research. Research time is allocated to researchers based on their performance.

### **1.2 Organisation**

ASE-RI, the research institute of the Amsterdam School of Economics, is one of the two research institutes of Economics & Business (EB); the other being the research institute of the Amsterdam Business School (ABS-RI). ASE-RI covers the wide area of economics, econometrics and actuarial science.

Research is organised in research programmes, which are directed by programme leaders who are experts with core positions in the curriculum. Stimulating research that significantly improves our understanding of the economy is meant as a focus on fundamental research. In many cases, the inspiration for research questions derives from practical problems in business and society as well as from pressing problems for government policies, as is only natural for a social science. But the research results should primarily be reported to the international academic community and assessed against the quality standards that apply there. Such permanent quality assessment feeds back into the quality of teaching and of advice given to business and the government. Contributions to public debates should be a consequence of developing reliable knowledge about the economy rather than a primary goal.

In addition to the research programmes, ASE-RI also hosts the Research Priority Area (RPA) Behavioural Economics. This is one of the 20 fields in which the UvA wishes to actively foster further development. Researchers from several programmes participate in the RPA Behavioral Economics, in particular in the fields of experimental economics, industrial organization, labour economics, and complex socio-economic systems. In 2014, ASE-RI and ABS-RI jointly have taken the initiative for a research focal area of Economics and Business on Risk and Macro Finance, in which researchers from (behavioural) finance, macro-economics, and actuarial science participate.

From 2019-2020 onwards, the research focal areas financed by the faculty are terminated in order to stimulate research in the, so-called, “Outside-In areas”: Digital transformations, resilient societies, financial stability and sustainable & environmental economics. Full responsibility for the RPAs will also from now on reside with the faculty whilst the financing from the University will continue.

ASE-RI closely co-operates with the Tinbergen Institute, where many of ASE-RI’s researchers are appointed as fellow. The Tinbergen Institute also acts as the graduate school for ASE-RI students.

### **1.3 Strategy and Policy**

The main strategic aim of ASE-RI is to produce research in (quantitative) economics with, on the one hand, a high impact on the international academic research agenda, and on the other hand a strong societal relevance.

The first aim is in line with ASE’s ambition to become a Top-10 school in Europe in each of the broad areas micro-economics, macro-economics, and quantitative economics (as stated in the ASE Strategic Plan of March 2016). The ambition implies that quality of publications has more emphasis than quantity. Although some variation in publication culture exists among the research programmes, it means that researchers are encouraged to aim at publishing in the top economics journals and in field journals with a high citation impact (currently measured by the Article Influence Score, AIS). The strategy to reach these aims consists of the following elements.

#### **Personnel policy**

As stated in the ASE Strategic Plan, vacancies for new research staff are to be filled at the tenure track level. The school has adopted a 6-year tenure track, with a mid-term review after 3 years. Tenure criteria

include, in addition to teaching performance and external funding, the ability to qualify as Research Fellow of the Tinbergen Institute, which requires that five publications in a recent five-year period are in journals with a cumulative AIS of five. In addition, ASE-RI requires that at least three publications are in a medium-impact field journal, or one in a Top-5 journal. As of 2014, recruitment of tenure track assistant professors occurs through the American academic job market, where a joint ASE recruitment committee aims to attract the most talented candidates, in line with the teaching requirements of the research-based bachelor and master programmes that the school offers in combination with the school's Top-10 ambition. Tenure and promotion decisions are made by the Dean. The promotion and Tenure (P&T) Committee advises the Dean based on a standard set of criteria and after the consultation of full professors in the department.

### **Research time allocation**

Each year, tenured faculty members with a research appointment (assistant, associate and full professors) are allocated research time based on research output. Currently the maximum research time for fulltime appointments (except for externally funded research) is 0,5 fte. As of 2014, the criteria for this maximum research time are aligned with criteria for Research Fellowship of the Tinbergen Institute, as indicated above. Researchers who do not satisfy these criteria may earn 0,25 fte, if their research output satisfies the corresponding fraction of the TI criteria. ASE-RI aims to appraise researcher performance and to provide a directive for further research with its standards for research.

### **PhD programme and placement**

A third approach to increasing the school's international research impact is through its PhD programme. As detailed below, ASE-RI's PhD programme is organised by the Tinbergen Institute graduate school. Through a systematic process of training, research supervision and job market preparation, the school aims at (and has succeeded in) placing its PhD graduates at good European and American departments.

ASE-RI also stimulates concentration of the school's research in research programmes by other means (such as providing an annual budget for conference visits and other academic activities to the Research Programmes).

## **1.4 Targets**

In view of the general aims, the specific targets related to research that are stipulated in the FEB's strategic plan 2015-2020 are:

- A gradual increase in the percentage of the internal research funds spent on research in the RPA;
- A growth in the number of publications per research fte, in top journals;
- An increase in the percentage of PhD projects completed within four years;
- An increase in the number of PhD defences;
- An increase in the percentage of research funded by the second stream (NWO, KNAW, ERC, EU);
- An increase in the number of personal grants and distinctions;
- An increase in the number of research projects, and income derived from "second money stream" and "third money stream" funding;
- Placement success of PhDs (percentage of PhDs getting placed at either a very good academic institution, or non-academic high profile organisations).

These targets were set at the faculty level, but are in line with the targets for the ASE-RI research programmes, with an emphasis on further growth of external funding to compensate for the expected decline in internal funding for tenured research and PhD positions. A further target is to attract excellent candidates for tenure track assistant professorship positions from the American academic job market, to help realise the ambition to become one of the Top-10 schools in Europe in Economics.

## 2 INPUT

### 2.1 Research Staff

Personnel policy and human resource management are the domain of the department chairs and section heads. ASE-RI encourages the sections to hire good researchers and to stimulate faculty to increase the quality and quantity of academic publications, and has a vote in promotion and tenure decisions. Broader strategy issues concerning hiring and firing are discussed within the Amsterdam School of Economics management team and this has resulted in a document on personnel policies in which the requirements that current and new staff should meet are clearly defined.

The tables below give information on ASE-RI faculty. Table I shows that the research capacity declined. A noticeable change is the relative decrease of the number of staff financed by the second flow of funds. As shown in table III, most faculty are in the ranks of full professor and PhD student (the number of researcher (oz) fte is highest, but the majority are working at SEO Economic Research). Overall there seems to be a healthy mix of researchers in different stages of their career, although the numbers of associate professors and postdoctoral researchers are low.

**Table I: Input research staff at institutional level (FTE)**

	fte	2016	2017	2018
<b>WP 1 (first flow of funds)</b>		39,31	36,32	37,52
<b>WP 2 (second flow of funds)</b>		8,14	11,79	9,94
<b>WP 3 (third flow of funds)</b>		38,47	35,04	31,77
<b>Ph.D. students</b>		22,32	18,10	18,58
<b>Total Research staff</b>		108,24	101,25	97,81
<b>Support staff ASE-RI (bureau)</b>		0,89	1,00	0,93
<b>Total Staff</b>		109,13	102,25	98,74

**Table II: Input research staff at programme level (FTE)**

<b>UvA-Econometrics</b>	fte	2016	2017	2018
<b>WP 1 (first flow of funds)</b>		3,34	4,14	4,55
<b>WP 2 (second flow of funds)</b>		0,20	0,00	0,00
<b>WP 3 (third flow of funds)</b>		0,00	0,00	0,00
<b>Ph.D. students</b>		0,54	1,60	1,87
<b>Total Research staff</b>		3,54	4,14	4,55
<b>Equilibrium, Expectations &amp; Dynamics</b>	fte	2016	2017	2018
<b>WP 1 (first flow of funds)</b>		6,93	6,15	7,81
<b>WP 2 (second flow of funds)</b>		1,08	2,76	1,60
<b>WP 3 (third flow of funds)</b>		0,00	0,00	0,00
<b>Ph.D. students</b>		2,94	3,74	3,48
<b>Total Research staff</b>		8,01	8,91	9,41
<b>Actuarial Science &amp; Mathematical Finance</b>	fte	2016	2017	2018
<b>WP 1 (first flow of funds)</b>		2,75	3,53	3,81
<b>WP 2 (second flow of funds)</b>		0,00	0,00	0,00
<b>WP 3 (third flow of funds)</b>		3,58	1,45	1,33
<b>Ph.D. students</b>		3,04	1,87	1,19
<b>Total Research staff</b>		6,33	4,98	5,14
<b>Macro and International Economics</b>	fte	2016	2017	2018
<b>WP 1 (first flow of funds)</b>		9,83	6,36	4,99
<b>WP 2 (second flow of funds)</b>		0,68	0,25	0,80
<b>WP 3 (third flow of funds)</b>		1,88	1,25	1,98
<b>Ph.D. students</b>		6,86	3,15	3,70



<b>Total Research staff</b>		12,39	7,86	7,77
<b><i>Human Capital</i></b>	<b>fte</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
WP 1 (first flow of funds)		2,97	3,02	3,08
WP 2 (second flow of funds)		2,48	3,86	2,55
WP 3 (third flow of funds)		0,20	0,20	0,20
Ph.D. students		1,47	0,94	0,93
<b>Total Research staff</b>		<b>5,65</b>	<b>7,08</b>	<b>5,83</b>
<b><i>Experimental &amp; Political Economcis</i></b>	<b>fte</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
WP 1 (first flow of funds)		9,93	8,25	7,97
WP 2 (second flow of funds)		2,90	4,39	4,99
WP 3 (third flow of funds)		0,00	0,00	0,00
Ph.D. students		6,13	4,93	4,87
<b>Total Research staff</b>		<b>12,83</b>	<b>12,64</b>	<b>12,96</b>
<b><i>Markets &amp; Organizations</i></b>	<b>fte</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
WP 1 (first flow of funds)		3,56	4,09	5,31
WP 2 (second flow of funds)		0,80	0,53	0,00
WP 3 (third flow of funds)		0,00	0,00	0,00
Ph.D. students		1,34	1,87	2,54
<b>Total Research staff</b>		<b>4,36</b>	<b>4,62</b>	<b>5,31</b>
<b><i>SEO</i></b>	<b>fte</b>	<b>2016</b>	<b>2017</b>	<b>2017</b>
WP 1 (first flow of funds)		0,00	0,00	0,00
WP 2 (second flow of funds)		0,00	0,00	0,00
WP 3 (third flow of funds)		32,81	32,14	28,26
Ph.D. students		0,00	0,00	0,00
<b>Total Research staff</b>		<b>32,81</b>	<b>32,14</b>	<b>28,26</b>

Table III: Ranks at programme level

Research programme	Hgl		Uhd		Ud		Oz		Pdoc		Ph.D.		Guest		Total	
	#	fte	#	fte	#	fte	#	fte	#	fte	#	fte	#	fte	#	fte
UvA-Econometrics	2	1,10	3	0,68	3	0,90	0	0,00	0	0,00	2	1,87	2	0,00	12	4,55
Equilibrium, expectations & dynamics	5	1,91	3	1,07	2	0,50	0	0,00	3	1,60	8	4,33	13	0,00	34	9,41
Actuarial science	3	1,12	0	0,00	6	2,83	0	0,00	0	0,00	3	1,19	7	0,00	19	5,14
MInt	8	2,42	0	0,50	5	0,99	0	0,00	2	0,16	7	3,70	12	0,00	34	7,77
Human Capital	5	2,35	0	0,00	2	1,00	4	1,55	0	0,00	3	0,93	3	0,00	17	5,83
Experimental & political economics	6	2,10	2	1,60	4	1,54	2	0,58	2	2,27	8	4,87	1	0,00	25	12,96
Markets & Organizations	5	1,00	1	1,00	5	0,77	0	0,00	0	0,00	3	2,54	0	0,00	14	5,31
SEO economic research	2	2,80	0	0,00	0	0,00	39	25,46	0	0,00	0	0,00	0	0,00	41	28,26
<b>Total</b>	<b>36</b>	<b>14,80</b>	<b>9</b>	<b>4,85</b>	<b>27</b>	<b>8,53</b>	<b>45</b>	<b>27,59</b>	<b>7</b>	<b>4,03</b>	<b>34</b>	<b>19,43</b>	<b>38</b>	<b>0,00</b>	<b>196</b>	<b>79,23</b>

\* hgl=professor, uhd=associate professor, ud=assistant professor, oz=researcher, pdoc=postdoctoral fellow

## 2.2 Resources, Funding and Facilities

A substantial part of the faculty's research budget is spent on the Tinbergen Institute, where it is used to cover the expenses of the MPhil programme, courses for both MPhil and PhD students and the organisation of seminars. Another large part of the budget concerns funding of the research priority area 'Behavioural Economics'.

Furthermore, the sections of ASE are allocated a budget for matching and a budget for its research programmes. Currently the entire research budget of the faculty of the first category of funds is a lump sum determined by the university based on Bachelor and Master diplomas and on the number of completed PhD theses. It is divided between the sections hosting the research programmes based on their number of completed PhD theses and on research time allocated to their individual researchers. The budget allocated to the programmes can be used for the funding of research fte's and for any research related activities of programme members, such as visiting conferences, conducting experiments and collecting data.

## 3 RESULTS

### 3.1 Processes in Research, Internal and External Collaboration

Actual research management occurs within the research programmes. Decisions on research strategies, research topics, joint work, participation in international networks and publication outlets are all taken within these programmes, sometimes by the programme leader, but mostly in an informal way by direct communication and interaction within these groups. Research groups are typically small and interaction is frequent, direct and effective.

As explained in previous chapters, ASE-RI allocates resources based on past performance. ASE-RI stimulates and facilitates application for external funding (NWO, KNAW, EU). In general, the research institute tries to stimulate an active research environment, and it tries to assist programme members, when necessary, by providing them with information and administrative support. The overall quality of the various seminar series is good. Especially in the Tinbergen Institute series foreign speakers are usually invited and the debates are lively.

#### Box I: Seminar series organised in co-operation with ASE-RI

- **Tinbergen Institute / CREED Seminars Series**
- **Tinbergen Institute Econometrics Seminars & Workshops Series**
- **Tinbergen Institute Organizations & Markets Double Seminars**
- **Tinbergen Institute Macro Seminars**
- **Tinbergen Institute Complexity-Macro Seminars**
- ***Tinbergen Institute Complexity in Economics Seminar Series***
- **Tinbergen Institute PhD Lunch Seminars**
- **Actuarial Science & Mathematical Finance Seminar**
- **Risk PhD Brown Bag Seminar**
- **Risk and Macro Finance Seminar**
- **Mint PhD Lunch seminar series**

Another way in which ASE-RI creates a stimulating research environment is by participating in the Tinbergen Institute (TI). Two other Dutch universities (Erasmus University and VU University) participate in the TI. It is their joint graduate school which facilitates exchange amongst its fellows (top researchers of the three participating faculties) by hosting seminar series and publishing a discussion paper series.

### 3.2 PhD Programme

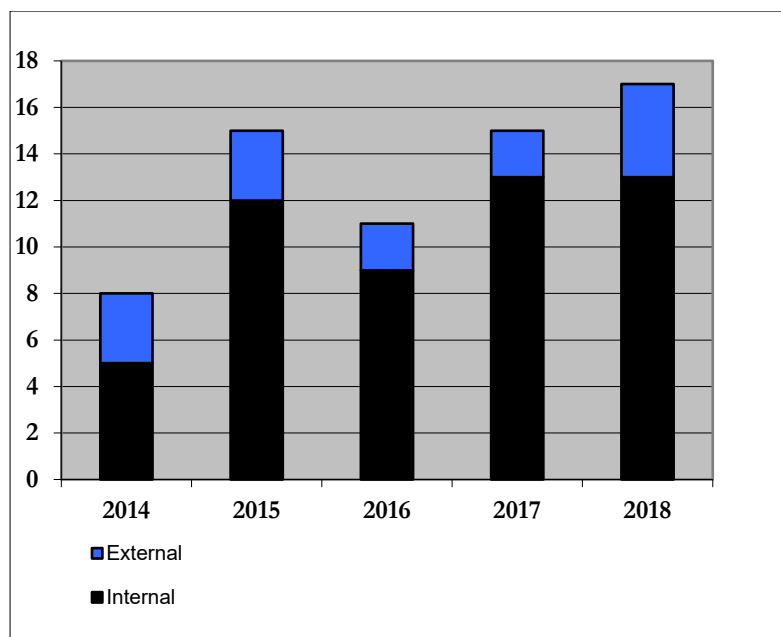
The PhD programme of ASE-RI is organised by the graduate school in Economics, Econometrics and Finance of the Tinbergen Institute (TI). It involves completing TI's 2-year MPhil research master programme before the start of the PhD appointment, a process of matching and selection during the second year of the MPhil programme, a three-year appointment as PhD student at one of the three participating universities, and (for those students who aim for an academic career after graduation) preparation for the international academic job market. The advantage of this system is that it offers students an excellent research-oriented two-year programme with good opportunities to meet top-level supervisors (TI-fellows).

**Table IV: PhD Inflow 2014-2018**

Cohort	2014	2015	2016	2017	2018
1st flow of fund projects	5	6	5,5	7	5
2nd flow of fund projects	2	1	1,5	2	3
3rd flow of fund projects	1	0	0	0	2
<b>Total projects started</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>9</b>	<b>10</b>

The inflow of PhD students stabilized around 8 in the years after 2014. In recent years the outflow of students from the Tinbergen Institute who completed their MPhil was sufficient to fill in all PhD vacancies. As can be seen in Table IV, most PhD projects concern the first flow of fund.

**Figure II: Dissertations 2014-2018**



**Table V: PhD completion rates**

Cohort	2015		2016		2017		2018	
	#	%	#	%	#	%	#	%
<b>PhD students graduated</b>	13	100%	19	100%	22	100%	29	100%
<b>within 60 months</b>	12	92%	11	58%	11	50%	11	38%
<b>within 48 months</b>	5	38%	6	32%	7	32%	6	21%
<b>Average duration (months)</b>	49		49		57		60	

More recent experience substantiates the claim that as the proportion of PhD students following the TI programme increases, the percentage of students finishing within 4 years will increase. This can be partly explained by the fact that such students only have a salaried position for three years, as opposed to the four-year positions in the past and in the second/third flow of fund. Furthermore, students entering such four year positions typically lack a research master background, and therefore have to complete a substantial amount of coursework in the first year of their PhD appointment. By contrast, the writing of an MPhil thesis, which typically will end up in the PhD thesis as a first chapter, gives MPhil graduates a head start. Most importantly, however, students who have completed the MPhil programme have been pre-selected based on academic talent and motivation, and have been exposed for two years to a peer group of similarly ambitious and talented students. It is clear that this peer group is increasingly focused on the academic job market, and hence on producing a single-authored job market paper within a period of two years after starting the PhD project, which, in combination with the factors mentioned earlier, will lead to improving PhD completion rates.

**Table VI: PhD placement**

Year of dissertation	Top academic or high-profile international organisation		Other	
	#	%	#	%
2013	3	38	5	62
2014	3	60	2	40
2015	7	54	6	46
2016	3	27	8	73
2017	6	46	7	54
2018	7	37	12	63

Students with an ambition to develop a career in academia after finishing their PhD are actively encouraged to participate in TI's job market preparation programme. This involves, among other things, feedback to improve the CV and reference letters, and mock job seminars and interviews to prepare for the American academic job market. In contrast with common practice up to a decade ago, in general ASE does not select tenure track candidates from its own pool of graduated PhD students. The group of PhD students that enter the programme through TI's MPhil programme is increasingly oriented towards the academic job market. Out of the 19 ASE-RI students who defended their PhD thesis in 2018, 37% of the initial placement was at a university from the top 200 of the QS ranking in the subject category Economics & Econometrics or a high-profile international organisation such as the International Monetary Fund.

### 3.3 Research Output

Figure II: Scientific output 2012-2017

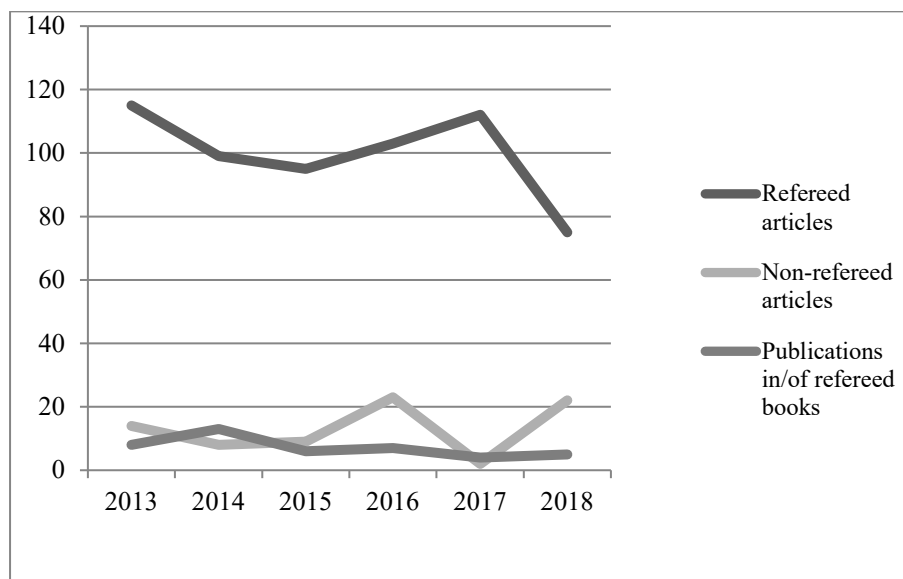


Figure II shows that after a decrease in 2014 and 2015, the scientific output increased again in 2016 and 2017. In 2018 a decrease is shown in refereed articles. From table 1 it can be seen that the research input (fte's) decreased in 2018. As a result, the scientific output per research fte increased 2018. The number of refereed publications per research fte excluding PhD students increased from 1,20 in 2016 to 1,36 in 2017 and decreased in 2018 to 1.03.

Table VII: Research output 2018

		UvA-e	EED	AS&MF	MInt	HUM	EPE	M&O	SEO	Total*
Articles in journals	refereed	11	11	13	10	7	18	5	8	77
	non-refereed	0	1	0	0	0	0	0	21	22
	professional	0	2	1	8	0	1	0	14	26
	popular	0	0	0	4	0	0	0	6	10
Books or book chapters	refereed	0	1	0	2	0	1	0	1	5
	non-refereed	0	0	0	1	0	1	0	0	2
	professional	0	0	0	0	0	1	0	0	0
	popular	0	0	0	0	0	0	0	0	0
Conference proceedings	non-refereed	0	0	0	2	0	0	0	60	62
Reports	non-refereed	0	0	1	0	0	0	0	0	1
PhD theses		0	2	2	7	4	4	0	0	18

\* Duplications removed

See table VII for an overview of the output of the research groups. ASE-RI aims to increase the quantity and quality of its publications, in particular in refereed journals. For this purpose, publications are graded by the quality level of the journals. Based on the Article Influence Percentile Score, top publications can be distinguished.<sup>1</sup> Table VII shows that except for 2016, the number of publications in top-refereed journals is slightly lower than publications in other journals. The number of top publications per research

<sup>1</sup> All journals with an Article Influence percentile score of  $\geq 80$  are considered to be 'top'. A journal's Article Influence score is a measure of the average influence of each of its articles over the first five years after publication. Scores are based on [www.eigenfactor.org](http://www.eigenfactor.org).

fte excluding PhD students (see table I for data on research input) was 0,66 in 2016, decreased slightly to 0,64 in 2017 and decreased significantly in 2018 to 0,39.

**Table VII: Refereed articles 2016-2018**

	2016		2017		2018		
	Top	Other	Top	Other	Top	Other	
UvA-Econometrics	4	4	1	5	4	7	
Equilibrium, Expectations and Dynamics	5	6	8	8	2	9	
Actuarial Science & Mathematical Finance	2	9	3	13	4	9	
Macro and International Economics	9	6	2	12	1	9	
Human Capital	6	1	6	1	7	0	
Experimental & Political Economics	22	5	23	9	11	7	
Markets & Organizations	9	5	10	3	5	0	
SEO	2	11	4	10	2	6	
<b>Total ASE-RI*</b>	<b>(#)</b>	<b>57</b>	<b>46</b>	<b>53</b>	<b>59</b>	<b>31</b>	<b>46</b>
	<b>(%)</b>	<b>55</b>	<b>45</b>	<b>47</b>	<b>53</b>	<b>40</b>	<b>60</b>

\*duplications removed

### 3.4 Academic Reputation

The 2018 QS World University Rankings by Subject puts the UvA in 2<sup>nd</sup> rank in the Netherlands and 49<sup>th</sup> worldwide for the discipline Economics and Econometrics.<sup>2</sup> In the ESB Economen-top 40 of 2018, UvA ranked 5<sup>th</sup> in the Netherlands and two ASE researchers, Hessel Oosterbeek and Thomas Buser, ranked 1<sup>st</sup> and 2<sup>nd</sup> in the individual ranking<sup>3</sup>.

### 3.5 Relevance to society

Although the main aim of ASE-RI is to let its research contribute to the international academic discourse, most research done within ASE-RI programmes contributes in several ways to society at large. Some examples are given here but more detailed information can be found in the programme sections in part B of this report.

The Human Capital Research Programme participates in TIER, an inter-university top Institute that conducts research in the field of evidence based education. The Top Institute wants to develop knowledge of ‘evidence based education’ that can be utilised by: 1) the Ministry of Education, Culture and Science in policy preparation and evaluation; 2) the educational practice – for example in educational institutions – in the allocation of resources and in the decision making process when choosing between educational theories; and 3) parents and students when choosing a school or training.

Researchers from the programmes Macro and International Economics and Actuarial Science & Mathematical Finance have strong ties with NETSPAR (network for studies on pensions, aging and retirement) and their research results will strongly impact the ways in which government and society will deal with the problems in these areas. In 2012 the Chair in Pension Economics was established, sponsored by MN.

SEO Economic Research carries out contract research for ministries and public organisations, private companies and non-profit institutions, nationally and internationally. SEO distinguishes itself from other research bureaus by its analytical approach. Modern economic analysis is applied to practical issues. Empirical questions are tackled with the econometrics toolkit.

<sup>2</sup> <https://www.topuniversities.com/university-rankings/university-subject-rankings/2017/economics-econometrics>.

<sup>3</sup> <https://esb.nu/esb/20036194/economentop-40-2017>.

## **4. RESEARCH PRIORITY AREA: BEHAVIOURAL ECONOMICS**

### **4.2 Design**

The Research Priority Area Behavioural Economics aims to improve our understanding of economic behaviour and decision making, with effective applications in governance, institutional arrangements and policy. It seeks to integrate into traditional economic theory insights from cognitive science, sociology and (neuro)biology. Going beyond traditional economic theories that assume rationality and narrow self-interest, RPA-BE (i) takes seriously social preferences, emotions and bounded rationality, using (ii) the methodological rigour developed in the economic sciences, including its experimental methods, econometric techniques and (game) theoretic modelling.

Research in Behavioural Economics has a strong empirical foundation; data are gathered in laboratory or field experiments. The Research Priority Area therefore invests in facilities and funding for laboratory and field-experimental research, and organizes internal seminars in which researchers comment on each other's plans (compulsory for funding), annual workshops, and international visits from or to co-authors. The Research Priority Area plays an active role in the dissemination of knowledge on behavioural economics.

### **4.2 Evaluation**

After its major success in 2014, when the Research Priority Area Behavioural Economics succeeded in acquiring (ongoing) Additional Funding of 301K euro per year on the basis of the grant proposal "Communication by Action and Market Design", it was again successful in 2015, and acquired an (again ongoing) grant similar in size on the basis of the proposal "Complex Human System Labs".

In 2018, the new communication lab was up and running, which made it possible to run a new series of experiments in which various modes of communication were successfully implemented and studied. The communication lab hosted a very successful conference in which some scholars participated who are leading the field of communication and economic decision making. The communication lab also successfully hired a new tenure tracker from NYU, Natalie Lee, who will start in September 2019. In 2018, the Complex Human System Labs edited a new book on Computational Economics.

### **4.3 Output**

Our research is mostly published in journals that are considered top in the field of Behavioral Economics (Experimental Economics, Games and Economic Behavior, Journal of Economic Theory, Journal of Economic Dynamics and Control, Management Science) and sometimes in top general audience economics journals, such as American Economic Review and Quarterly Journal of Economics. Fitting our aim to facilitate and promote interdisciplinary out-reach, our work is also published in top-rated journals in adjacent disciplines (e.g., Journal of Personality and Social Psychology, Psychological Bulletin, Journal of Theoretical Biology). A remarkable trend is the sharp increase in publications in top general science journals such as Science and Proceedings of National Academy of Sciences.

## 5. RESEARCH FOCAL AREA: RISK AND MACRO FINANCE

### 5.1 Introduction

Economics and Business at the University of Amsterdam has defined Risk and Macro Finance as a key research theme (“research focal area” - RFA), seen as a convergence and integration of methodologies to develop a more insightful view of recessions, financial crises and systemic risk. Such cross-disciplinary research is much-needed to adequately respond to some of the most fundamental economic problems of our times: (i) endogenous risk creation, feedback effects, interconnectedness of financial markets and institutions, and tail risks; (ii) the relation between government finances and the financial sector; (iii) the financing of long-term guarantees and investments in insurance and pensions and the link to the macro economy; and (iv) the regulation of the broader financial sector, including shadow banking and (re)insurance. The initiative is the first of its kind in Europe. It pursues top-quality academic research, but also aims at facilitating policy and practice. The initiative is broadly supported by the Amsterdam Business School and the Amsterdam School of Economics.

ACRM’s website <http://www.acrm.uva.nl> contains further details about its activities.

### 5.2 Activities

The Amsterdam Center of Excellence in Risk and Macro Finance (ACRM) hosting the activities of the Risk and Macro Finance research focal area of the University of Amsterdam's Faculty of Economics and Business, and directed by Prof. Roger Laeven, Prof. Enrico Perotti and Prof. Sweder van Wijnbergen, has seen a very successful fifth year, in which it has further expanded the intensity and impact of its research activities.



Its main activities and successes in 2018 include:

1. ACRM has organized the Risk and Macro Finance seminar series on academic top-level research overlapping the areas of macroeconomics, finance and risk management. Featured speakers in 2018 include top academics from Boston University, Imperial College London, NYU Stern, and Wharton.
2. ACRM has organized two workshops:
  - A one-day R&MF-CEPR workshop on “*Regulatory Forbearance in Stress Testing, CoCo Conversion and Bank Resolution*” (with participants from the BIS, Boston, CEMFI, Chicago, DNB, ECB, Erasmus, Geneva, Goethe, FED, NYU, UvA, Xiamen) on June 8, 2018.
  - A two-days academic workshop on “*Demand for Safety*” (featuring William Diamond, Wharton, Gary Gorton, Yale, Martin Oehmke, LSE, Guillermo Ordonez, Pennsylvania, Guillaume Vuilleme, HEC Paris) on November 29-30, 2018.
3. ACRM has awarded 10 Junior Risk and Macro Finance Fellowships 2018 to junior researchers representing the full width of Risk and Macro Finance research at the FEB and its two schools. To strengthen the senior level involvement in Risk and Macro Finance, Prof. Frank Kleiberger (QE) has been appointed (internal) Senior Risk and Macro Finance Fellow, next to Prof. Roel Beetsma (MINT) and Prof. Massimo Guiliodori (MINT).
4. ACRM has successfully completed its PhD selection process and will be funding another ACRM PhD position as per September 2019.
5. In 2018, the ACRM directors got their ACRM research accepted in top notch journals, such as the *Journal of Econometrics* (twice), *Journal of Financial Intermediation*, *Insurance: Mathematics and Economics*, *Management Science*, *Mathematics and Financial Economics*, and *Mathematics of Operations Research*. ACRM publications are collected in the ACRM Publication Database.



6. In 2018, ACRM co-director Roger Laeven was re-appointed and re-inaugurated to a second mandate as selected Academic Member of the IRSG Advisory Board of the European Insurance and Occupational Pensions Authority (EIOPA).
7. ACRM co-director Enrico Perotti and co-authors have been awarded the 2018 Oliver E. Williamson Prize for the best article published in the *Journal of Law, Economics & Organization* in 2017. In their study they explain the historical emergence of the corporate form in the 17th century in the Dutch Republic and contrast it with similar developments in England.
8. In 2018, ACRM co-director Prof. Sweder van Wijnbergen served as External Academic Advisor to the Dutch Central Bank (DNB).
9. In 2018, ACRM co-director Prof. Sweder van Wijnbergen served as member of the Dutch Pension Reform Advisory Committee.
10. ACRM successfully completed its first mid-term evaluation. It received the highest marks “excellent” for the most substantial parts of the review (i.e., “design” and “performance”).

### 5.3 Publications (selection)

#### Forthcoming publications

- Bilsen, Servaas van, Roger J. A. Laeven & Theo E. Nijman (2019). Consumption and portfolio choice under loss aversion and endogenous updating of the reference level, *Management Science*, forthcoming.
- Bilsen, Servaas van, A. Lans Bovenberg & Roger J. A. Laeven (2019). Consumption and portfolio choice under internal multiplicative habit formation, *Journal of Financial and Quantitative Analysis*, forthcoming.
- Bellini, Fabio, Roger J. A. Laeven & Emanuela Rosazza Gianin (2019). Dynamic robust Orlicz premia and Haerzendorck-Govaerts risk measures, *European Journal of Operational Research*, forthcoming.
- Ikefuji, Masako, Roger J. A. Laeven, Jan R. Magnus & Chris Muris (2019). Expected utility and catastrophic risk in a stochastic economy-climate model, *Journal of Econometrics*, forthcoming.

#### Publications

- Beetsma, Roel M. W. J., Massimo Giuliodori, Jesper Hanson & Frank C. J. M. de Jong (2018). Cross-Border Auction Cycle Effects of Sovereign Bond Issuance in the Euro Area. *Journal of Money, Credit and Banking*, 50(7), 1401-1440.
- Beetsma, Roel M. W. J., Massimo Giuliodori, Jesper Hanson & Frank C. J. M. de Jong (2018). Bid-to-cover and yield changes around public debt auctions in the Euro Area. *Journal of Banking & Finance*, 87, 118-134.
- Boermans, Martijn A., & Sweder J. G. van Wijnbergen (2018). Contingent convertible bonds: Who invests in European CoCos? *Applied Economics Letters*, 25(4), 234-238.
- Boswijk, H. Peter, Roger J. A. Laeven & Xiye Yang (2018). Testing for self-excitation in jumps, *Journal of Econometrics*, 203, 256-266.
- Bellini, Fabio, Roger J. A. Laeven & Emanuela Rosazza Gianin (2018). Robust return risk measures, *Mathematics and Financial Economics*, 12, 5-32.
- Kaas, Rob, Roger J. A. Laeven, Sheldon Lin, Qihe Tang, Gordon Willmot & Hailiang Yang (2018). Editorial: IME's Editorial Board, *Insurance: Mathematics and Economics*, 78, A1-A3.
- Krätschmer, Volker, Marcel Ladkau, Roger J. A. Laeven, John G. M. Schoenmakers & Mitja Stadjc (2018). Optimal stopping under uncertainty in drift and jump intensity, *Mathematics of Operations Research*, 43, 1177-1209.
- Martynova, Natalya & Enrico C. Perotti (2018). Convertible Bank Capital and Risk Incentives, *Journal of Financial Intermediation*, 35, 61-80.

#### Forthcoming PhD theses

- Döttling, Robin (2019). *Essays in Financial Economics*. [ACRM junior fellow. Promotor: Prof. Enrico C. Perotti.]
- Golec, Pascal (2019). *Essays in Financial Economics*. [ACRM junior fellow. Promotor: Prof. Enrico C. Perotti.]

Li, Merrick Zhen (2019). *Econometric Analysis of High-Frequency Market Microstructure*. [Promotores: Prof. Roger J. A. Laeven, Prof. Michel H. Vellekoop. Co-Promotor: Prof. H. Peter Boswijk.]  
Sperna Weiland, Rob (2019). *Essays on Macro-Financial Risks*. [ACRM junior fellow. Promotores: Prof. Roger J. A. Laeven, Prof. Frank C. J. M. de Jong. Co-Promotor: Prof. Peter Spreij.]

**PhD theses**

Sakalauskaite, Ieva (2018). *Essays on Malpractice in Finance*. [Promotor: Prof. Enrico C. Perotti.]  
Jakucionyte, Egle (2018). *The Macroeconomic Consequences of Carry Trade Gone Wrong and Borrower Protection*. [Promotor: Prof. Sweder J. G. van Wijnbergen.]

**Policy publications**

Perotti, Enrico C. (2018). Financial Stagnation, December 18, 2018, VoxEU.

B

THE RESEARCH PROGRAMMES

## 6. UvA-ECONOMETRICS

Programme director: Prof. dr. F.R. Kleibergen  
 Section: Quantitative Economics  
 JEL-classification: C1, C2, C3, C4, C5  
 Starting date: 1997  
 Website: [www.ase.uva.nl/uva-econometrics](http://www.ase.uva.nl/uva-econometrics)

### 6.1 Members of the research group and research in ftes

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
<b>Aristodemou, E.</b>	dr.	ud	0,50	0,50	0,50	1
<b>Boswijk, H.P</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Broda, S.A.</b>	dr.	ud	0,50	0,50	0,08	1
Bun, M.	dr.	uhd	0,20	-	-	2
<b>Bun, M.</b>	dr.	uhd	0,33	0,11	0,11	1
<b>Garderen, K.J. van</b>	dr.	uhd	0,04	0,00	0,07	1
<b>Giersbergen, N.P.A. van</b>	dr.	ud	0,08	0,00	0,07	1
<b>Gooijer, J.G. de</b>	prof. dr.	guest	0,00	0,00	0,00	1
<b>Janssens, E.</b>	msc	phd	-	-	0,27	1
<b>Keijsers, B.</b>	dr.	ud	-	-	0,25	1
<b>Kiviet, J.F.</b>	prof. dr.	guest	0,00	0,00	0,00	1
<b>Kleibergen, F.R.</b>	prof. dr.	hgl	0,60	0,60	0,60	1
<b>Kong, L.</b>	msc	phd	0,27	0,80	0,80	1
Liu, Y.	msc	phd	0,27	-	-	1
<b>Ophem, J.C.M. van</b>	dr.	uhd	0,25	0,33	0,50	1
Poldermans, R.	msc	phd	0,00	-	-	1
<b>Stephan, S.</b>	msc	phd	-	0,80	0,80	1
Total 1st flow of funds			3,34	4,14	4,48	
Total 2nd flow of funds			0,20	0,00	0,00	
Total 3rd flow of funds			0,00	0,00	0,00	
Total 1st f.o.f. excl. PhD			2,80	2,54	2,61	
Total 1st-3rd flow of funds			3,54	4,14	4,48	
PhD students			0,54	1,60	1,87	

## 6.2 Programme design

The UvA-Econometrics programme aims at improving the accuracy, efficiency and robustness of econometric inference methods.

### Motivation

Empirical economic data are usually not obtained from markets or agents in static equilibrium. Typically they provide a random and disturbed indication at a certain moment in time, or over a relatively short period, of dynamic jointly dependent adjustment processes. Also they usually concern just a few aspects of the underlying complex (non-) linear economic system. The various projects united in this programme all try to gear statistical techniques to the typical characteristics of empirical economic data. The main interest is the development of accurate and efficient econometric inference to test economic theory, to support decision making and for policy evaluation.

### Techniques

Both analytic and experimental methods are used in this programme to improve understanding of the available statistical inference techniques, and to develop alternatives. The analytic aspects often involve the derivation of asymptotic distributions, the approximation of finite sample moments or distribution functions, the elimination of nuisance parameters etc. In computer simulations of completely specified systems the existing standard procedures and the newly developed techniques are then compared and evaluated experimentally. Occasionally the alternative techniques as such are of an experimental nature, because they involve computer-intensive methods (bootstrap resampling, randomization techniques, simulation-based inference). Actual data often serve to illustrate the empirical relevance and practical usefulness of the theoretical findings, but at times empirical issues are the prime motivation of the research projects engaged in.

### Applications

The fundamental problems of econometrics indicated above are studied in interplay with actual applied econometric research. These applications come from economics, finance or business. We do not intend to provide an exhaustive overview of specific applications, but UvA-Econometrics is active in labour economics (wage determination, job mobility and allocation, returns to schooling), development economics (exports and productivity, infant mortality), health economics (organization of health care, intelligence and mortality), finance (measurement and modelling of stock return volatility, option pricing, credit risk, risk premia), international economics (effects of trade policy and economic integration), monetary economics (demand for money, term structure of interest rates) and business (marketing activities). The economic behaviour of individual agents is analysed on the basis of observational or experimental data of various dimensions (cross-section, time series or panel data).

### Sub-themes within the general programma

#### *Econometric Theory*

Within this sub-theme, analytical finite sample approximations, simulation-based inference, inference based on IV/GMM with weak instruments, conditional inference, methods from differential geometry as well as semi- and non-parametric methods are studied for and applied in models that may be dynamic, simultaneous or non-linear.

#### *Microeconometrics*

Econometric analyses within this sub-theme often entail a quantitative assessment of the effectiveness of a policy intervention. Outside controlled experiments policies are usually endogenous. Unbiased assessment of effectiveness requires adequate modelling of the causality, handling of any unobserved heterogeneity and understanding of the identification issues. Applications often include panel data, which calls for the development of accurate inference methods for dynamic panel data models.

#### *Financial Econometrics*

Topics are ARCH and stochastic volatility models, the econometrics of the CAPM and factor models, econometric models of the term structure of interest rates, econometric analysis of credit risk, the analysis of option data and implied volatilities, and the analysis of high-frequency data and realized volatility. Applications within this sub-theme often include non-stationary data. This leads to the analysis of unit roots, cointegration and error correction models, the role of (weak) exogeneity in such models and structural change.

### 6.3 Programme Evaluation

The output of the research group is not appropriately spread over its members since it primarily results from a smaller sub group. We expect that the new tenure tracker increases the research output.

Almost weekly, a Friday afternoon (mostly external) seminar is organised at (and funded by) the Tinbergen Institute, jointly with econometricians from VU University Amsterdam. It is an active seminar series, with high-quality international speakers. In addition, occasionally an internal informal workshop is held on Thursdays, where research projects which are still in an early stage are discussed. These meetings stimulate the coherence of the research programme and should lead to more joint research projects; however, their frequency has recently declined, which is a point for concern. All activities and achievements of UvA-Econometrics are communicated via its website ([www.ase.uva.nl/uva-econometrics](http://www.ase.uva.nl/uva-econometrics)).

It is the ambition of UvA-Econometrics to gain further recognition as one of the major strongholds in theoretical econometrics. The activities and achievements over the last decade (number and quality of publications, presentations at and invitations for international meetings, responsibilities regarding journals and conferences, hosting of visiting scholars, exposure at peer institutions, etc.) have been substantial, but leave room for further qualitative and quantitative improvements. In particular, the continued high teaching loads in the group have had a negative impact on the research output of some of its members, and consequently on the research time available to the programme. Most individual members of UvA-Econometrics continue to operate in intensive formal and informal national and international networks. As part of a strategy for improvement of research output, UvA-Econometrics continues to aim at strengthening its ties with other faculty research programmes, in the form of joint applied research projects in micro-econometrics and financial econometrics. There are currently three PhD students: Lingwei Kong, Sanna Stephan and Eva Janssens. Two more will start in September 2019.

The above evaluation can be summarized in the following **SWOT analysis** regarding the activities and current position of UvA-Econometrics:

**Strengths:** good reputation; a relatively steady stream of publications; quality of human capital; expertise in a broad range of cutting edge areas of econometric (and statistical) theory; recently improved prospects regarding external funding; coherence of and atmosphere within the group; active seminar and workshop series; exposure via own discussion paper series; tight but appropriate facilities regarding computing and travel.

**Weaknesses:** relatively few links with other units of the FEB outside the quantitative economics research groups; only a small number of its members regularly publish in A-journals. One senior member of the group Maurice Bun has largely left for the DNB. One new tenure tracker Yi He from Monash has been hired but there is likely one more vacancy. It is hard to attract tenure trackers from the job market given the not very competitive offers we can make.

**Opportunities:** recently developed MPhil program and Fast Track in Econometrics within the Tinbergen Institute; developing a more applied data science profile within ASE and with the ABS. Idea is to gather all those interested in data science at ASE to develop this further.

**Threats:** decreased research input due to small number of faculty members that publish regularly. This has led to a high teaching load for some senior faculty members which leaves them little room to conduct research. Some senior member therefore decided to leave and it is not ruled out that others will follow. To counter this a new initiative has been made by ASE-RI to temporarily award research time to those with currently don't have any based on a research proposal.

### 6.4 Resources and Funding

The current ASE-RI facilities allow the active researchers (and also first and second year PhD students) to attend at least one international conference per year; in practice more is possible, so the research group does not experience binding constraints in this respect. In recent years, UvA-Econometrics has been quite successful in obtaining external funding for research activities. To maintain a good research environment and attract more PhD students, it is important that UvA-Econometrics remains successful in obtaining external funding.

## 6.5 Output

### *Key publications*

Boswijk, H.P, Jansson, M. & Nielsen, M.Ø. (2015). Improved likelihood ratio tests for cointegration rank in the VAR model. *Journal of Econometrics*, 184 (1), 97–110.

Boswijk, H. P., Bun, M. J. G., & Schinkel, M. P. (2019). Cartel Dating. *Journal of Applied Econometrics*, 34(1), 26-42. <https://doi.org/10.2139/ssrn.2860613>, <https://doi.org/10.1002/jae.2660>

Broda, S. A. (2019). Testing for Individual Sphericity in Heterogeneous Panels. *Biometrika*. <https://doi.org/10.1093/biomet/asz018>

Guggenberger, P., Kleibergen, F., Mavroeidis, S. & Chen, L. (2012). On the asymptotic sizes of subset Anderson-Rubin and Lagrange multiplier tests in linear instrumental variables regression. *Econometrica* 80, 2649–2666.

Van Ophem, H., Van Giersbergen, N., van Garderen, K. J., & Bun, M. (2019). The cyclicity of R&D investment revisited. *Journal of Applied Econometrics*, 34(2), 315-324. <https://doi.org/10.1002/jae.2667>

Kleibergen, F.R. and Z. Zhan (2020). Robust inference for consumption-based asset pricing, *Journal of Finance*, forthcoming. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3387882](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3387882)

### *Forthcoming*

Dovonon, P., A. Hall and F. Kleibergen, Inference in Second Order Identified Model, *Journal of Econometrics*, Forthcoming

Guggenberger, P., F. Kleibergen and S. Mavroeidis (2019). A more powerful subvector Anderson Rubin test in linear instrumental variables regression. *Quantitative Economics*, 10, 487-526 <https://doi.org/10.3982/QE1116>

Kleibergen, F.R. and Z. Zhan (2020). Robust inference for consumption-based asset pricing, *Journal of Finance*, forthcoming. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3387882](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3387882)

Van Ophem, H., Van Giersbergen, N., van Garderen, K. J., & Bun, M. (2019). The cyclicity of R&D investment revisited. *Journal of Applied Econometrics*, 34(2), 315-324. <https://doi.org/10.1002/jae.2667>

### *E-publication ahead of print*

Boswijk, H. P., Bun, M. J. G., & Schinkel, M. P. (2019). Cartel Dating. *Journal of Applied Econometrics*, 34(1), 26-42. <https://doi.org/10.2139/ssrn.2860613>, <https://doi.org/10.1002/jae.2660>

Broda, S. A. (2019). Testing for Individual Sphericity in Heterogeneous Panels. *Biometrika*. <https://doi.org/10.1093/biomet/asz018>

### *Publications in numbers*

Output type	Classification	#
Articles in journals	Refereed	11
	Non-refereed	0
	Professional	0
	Popular	0
Books or book chapters	Refereed	0
	Non-refereed	0
	Professional	0
	Popular	0
Conference proceeding		0
PhD theses		0
<b>Total</b>		<b>11</b>

### ***Article in journal – refereed***

- Ben Salah, H., Gooijer, J. G. de, Gannoun, A., & Ribatet, M. (2018). Mean-variance and mean-semivariance portfolio selection: A multivariate nonparametric approach. *Financial Markets and Portfolio Management*, 32(4), 419-436. <https://doi.org/10.1007/s11408-018-0317-4>
- Boswijk, H. P., Laeven, R. J. A., & Yang, X. (2018). Testing for self-excitation in jumps. *Journal of Econometrics*, 203(2), 256-266. <https://doi.org/10.1016/j.jeconom.2017.11.007>
- Boswijk, H. P., & Zu, Y. (2018). Adaptive wild bootstrap tests for a unit root with non-stationary volatility. *Econometrics Journal*, 21(2), 87-113. <https://doi.org/10.1111/ectj.12100>
- Broda, S. A., Krause, J., & Paoletta, M. S. (2018). Approximating expected shortfall for heavy-tailed distributions. *Econometrics and Statistics*, 8, 184-203. <https://doi.org/10.1016/j.ecosta.2017.07.003>
- Bun, M. J. G., & Huberts, L. C. E. (2018). The Impact of Higher Fixed Pay and Lower Bonuses on Productivity. *Journal of Labor Research*, 39(1), 1-21. <https://doi.org/10.1007/s12122-017-9260-9>
- Franses, P. H., & Janssens, E. F. (2018). Inflation in Africa, 1960-2015. *Journal of International Markets, Institutions and Money*, 57, 261-292. <https://doi.org/10.1016/j.intfin.2018.09.005>
- Garderen, K. J. van, & Sowell, F. (2018). Multimodality p<sup>\*\*</sup>-formal and confidence regions. *Econometric Theory*, 34(2), 416-446. <https://doi.org/10.1017/S0266466617000214>
- Kiviet, J. F., & Chen, Z. (2018). A critical appraisal of studies analyzing co-movement of international stock markets with a focus on East-Asian indices. *Annals of Economics and Finance*, 19(1), 151-196.
- Kleibergen, F., & Zhan, Z. (2018). Identification-robust inference on risk premia of mimicking portfolios of non-traded factors. *Journal of Financial Econometrics*, 16(2), 155-190. <https://doi.org/10.1093/jjfnec/nby005>
- Mazza, J., & Ophem, H. van (2018). Separating risk from heterogeneity in education: a semiparametric approach. *Journal of the Royal Statistical Society, Series A*, 181(1), 249-275. <https://doi.org/10.1111/rssa.12253>
- Voyant, C., Gooijer, J. G. de, & Notton, G. (2018). Periodic autoregressive forecasting of global solar irradiation without knowledge-based model implementation. *Solar Energy*, 174, 121-129. <https://doi.org/10.1016/j.solener.2018.08.076>

### **Activities**

#### ***Talk or presentation***

- Boswijk, Peter (Speaker), Bootstrapping Non-Stationary Stochastic Volatility, 22-23 Jun 2018
- Boswijk, Peter (Speaker), Bootstrapping Non-Stationary Stochastic Volatility, 7-8 Sep 2018
- Kleibergen, F.R. (Speaker), A more powerful subvector Anderson-Rubin test in linear instrumental variables regression, 6 Jan 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 17 Apr 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 21 Apr 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 25 May 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 7 Jun 2018
- Kleibergen, F.R. (Speaker), A more powerful subvector Anderson-Rubin test in linear instrumental variables regression, 28 Jun 2018
- Kleibergen, F.R. (Speaker), Inference in second order identified models, 29 Aug 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 11 Oct 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 30 Nov 2018
- Kleibergen, F.R. (Speaker), Robust Inference for Consumption-Based Asset Pricing, 7 Dec 2018



***Editorial work***

Kleibergen, F.R. (Programme Committee Member), Econometrics Society Meeting

Kleibergen, F.R. (Programme Committee Member), International Association for Applied Econometrics, (IAAE)

Kleibergen, F.R. (Member of editorial board), Journal of Econometrics (Journal)

Kleibergen, F.R. (Programme Committee Member), Society for Financial Econometrics World Meeting

***Prize***

Eva Janssens (Recipient), NWO Research Talent, Jun 2018

Eva Janssens (Recipient), Professor Bruins Prize, 3 Sep 2018

## 7. Equilibrium, Expectations & Dynamics

Subprogrammes:	EU FP7 Integrated Macro-Finance Modelling for Robust Policy Design (MACFINROBODS); EU Horizon 2020, Bridging the gap: from Individual Behaviour to the Socio-technical MaN (IBSEN); Institute of New Economic Thinking (INET), Heterogeneous Expectations and Financial Crises (HexFiCs); Marie Curie Innovative Training Network, Expectations and Social Influence Dynamics in Economics (ExSIDE). NWO ORA Behavioral and Experimental Analysis in Macro-Finance
Programme director:	Prof. dr. C.G.H. Diks
Section:	Quantitative Economics
JEL-Classification:	C, D, E6
Starting date:	1998
Website:	<a href="http://cendef.uva.nl">http://cendef.uva.nl</a>

### 7.1 Members of the research group and research in FTEs

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
Altaghlibi, M.	msc	guest	0,00	0,00	-	1
Amman, H.M.	prof. dr.	hgl	0,00	0,00	0,00	1
Cafferata, A.	msc	guest	-	0,00	0,00	1
Diks, C. (CeNDEF)	prof. dr.	hgl	0,50	0,50	0,50	1
Fang, H.	msc	phd	0,80	0,53	-	1
Fang, H.	dr.	guest	-	-	0,00	1
Goy, G.	msc	phd	0,27	0,80	0,20	1
Goy, G.	msc	guest	-	-	0,00	1
Hennequin, M.	msc	phd	0,80	0,80	0,53	1
Hennequin, M.	msc	guest	-	-	0,00	1
Hommes, C.H. (CeNDEF)	prof. dr.	hgl	0,50	0,56	0,70	1
Hommes, C.H. (CeNDEF)	prof. dr.	hgl	0,35	0,10	-	2
Huber, S.	dr.	ud	-	0,17	0,50	1
Jong, J. de	msc	phd	-	0,27	0,80	1
Kopányi, D.	dr.	postdoc	0,27	0,80	0,80	2
Kopányi-Peuker, A.	dr.	postdoc	0,80	0,80	0,80	2
Koster, M.A.L.	dr.	uhd	0,08	0,00	0,07	1
Leij, M. van der	dr.	ud	0,50	0,13	-	1
Leij, M. van der	dr.	uhd	-	0,37	0,50	1
Levelt, E.	msc	phd	-	0,27	1,00	1
Li, H.	msc	guest	0,00	0,00	0,00	1
Linardi, F.	msc	guest	0,00	0,00	-	1
Lustenhouwer, J.	msc	phd	0,80	0,53	-	2
Makarewicz, T.	dr.	postdoc	0,53	0,53	-	2
Makarewicz, T.	dr.	postdoc	0,27	-	-	1
Meertens, Q.	msc	guest	0,00	0,00	-	1
Moghayer, S	dr.	guest	-	-	0,00	1
Mohammadian Moghayer, S.	dr.	guest	0,00	0,00	-	1
Negriu, A.	msc	phd	-	-	-	1
Negriu, A.	msc	guest	0,00	-	-	1
Ozden, T.	msc	phd	-	0,27	0,80	1
Ramer, R.	dr.	guest	0,00	0,00	0,00	1

<b>Ruiter, A.</b>	dr.	guest	0,00	0,00	0,00	1
Salle, I.	dr.	postdoc	0,20	-	-	2
<b>Salle, I.</b>	dr.	guest	-	0,00	0,00	1
<b>Silva, E.</b>	msc	guest	-	0,00	-	1
<b>Sloot, P.</b>	prof. dr.	hgl	0,07	0,21	0,21	1
Sniekers, F.	msc	guest	0,00	-	-	1
Stephan, S.	msc	phd	0,27	-	-	1
<b>Tuinstra, J. (CeNDEF)</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Turco, E.</b>	msc	phd	-	0,27	1,00	1
Veld, D. in 't	dr.	guest	0,00	-	-	1
<b>Wagener, F. (CeNDEF)</b>	dr.	uhd	0,50	0,50	0,50	1
<b>Wang, J.</b>	msc	guest	0,00	0,00	0,00	1
<b>Wang, H.-S.</b>	msc	guest	0,00	0,00	-	1
<b>Wolski, M.</b>	msc	guest	0,00	0,00	0,00	1
Total 1st flow of funds			6,93	6,15	7,81	
Total 2nd flow of funds			1,08	2,76	1,60	
Total 3rd flow of funds			0,00	0,00	0,00	
Total 1st f.o.f. excl. PhD			2,92	2,41	3,48	
Total 1st-3rd flow of funds			8,01	8,91	9,41	
PhD students			2,94	3,74	4,33	

## 7.2 Programme design

The objective of the programme is the development of (mathematical) economic theory, focussing on the understanding of economic processes. The programme aims at developing models of economic behaviour in different areas of economics, including microeconomics, macroeconomics and finance. Emphasis is given to behavioural models of dynamic market phenomena.

The research group employs a multi-disciplinary approach. The models are studied both from a theoretical and a computational perspective, and the validity of the models is tested in laboratory experiments with human subjects as well as empirically using real data. The NWO-Vernieuwingsimpuls Information Flows in Financial Markets, the EU STREP project Financial Markets and Complexity and the NWO-VIDI programme *Structural Stability in Economic Dynamics* are part of the research programme.

The programme can be subdivided into five closely related and interacting research themes:

### *Equilibrium theory*

Individual optimising behaviour of economic agents generates aggregate supply and demand of commodities, as a function of prices and individual expectations. In equilibrium supply and demand are equal. Many types of equilibrium can be studied: partial versus general, competitive versus monopolistic, dynamic versus static, temporary equilibrium, single, representative agent as well as heterogeneous, interacting agents equilibria. The existence of equilibria is studied, as well as conditions for stability or instability of dynamic adjustment processes.

### *Game theory & Industrial organisation*

This part of the programme focuses on modelling strategic behaviour of economic agents in markets with imperfect competition, such as duopoly and oligopoly. Equilibria in non-cooperative games (e.g. duopoly, oligopoly) as well as cooperative games (costs sharing, general equilibrium) are studied. Evolutionary games with heterogeneous, boundedly rational strategies competing against each other are also studied.

### *Expectations and learning*

Bounded rationality models of expectation formation and learning schemes are becoming a serious alternative to rational expectations, which was the dominating paradigm until quite recently. The fully rational representative agent is replaced by a large *heterogeneous* population of boundedly rational interacting agents, who form expectations based upon time series observations and update their forecasting rules according to new observations and new information about market fundamentals. Conditions under which learning schemes converge to rational expectations or to a boundedly rational expectations equilibrium with

excess volatility are investigated. Formation of expectations is studied in theory, in laboratory experiments with human subjects and in real markets.

#### *Nonlinear economic dynamics*

This part of the programme focuses on nonlinear complexity models of dynamic market phenomena. Are market fluctuations mainly caused by random exogenous shocks, or can endogenous nonlinear economic laws of motion explain (a significant part of) the fluctuations? Various deterministic and stochastic economic models are studied theoretically, computationally as well as empirically, attempting to explain the most important stylised facts observed in real economic and financial time series. Emphasis is given to *complex adaptive systems* where markets consist of a large population of agents selecting simple strategies according to their relative success in the recent past. In these evolutionary adaptive systems endogenous variables such as prices and agents' beliefs co-evolve over time.

#### *Dynamic optimisation*

Emphasis is given to dynamic optimisation problems in environmental economics, characterised by a conflict between economic benefits and ecological costs. Tools from nonlinear dynamics and bifurcation theory are employed to investigate non-convex dynamic optimisation problems. The main thrust is a structural analysis, that is, investigation of the global solution structure of dynamic optimisation problems and dynamic games. The qualitative changes of these solutions are studied under changes of the parameters. Geometrical methods, like bifurcation theory, normal form theory and perturbation theory, as well as numerical methods yield insights that hold not just at isolated parameter values, but for the complete parameter set.

### **7.3 Programme evaluation**

This programme grew out of a mathematical economics program *Equilibrium and Dynamics*, led by Weddepohl, which was quite small until the mid nineties. The group was extended considerably at the end of 1998, thanks to an NWO-MaG Pionier grant awarded to Hommes, to set up the Center for Nonlinear Dynamics in Economics and Finance (CeNDEF). At that time the program changed from a small specialized mathematical economics program into a multi-disciplinary research program with an emphasis on economic theory, but also running laboratory experiments (in cooperation with Joep Sonnemans at CREED) to test behavioural theories and doing empirical work as well (in cooperation with Peter Boswijk at UvA-Econometrics), in particular nonlinear time series analysis, to test behavioural models empirically. Weddepohl retired in 2002 while Furth and Koster joined the group in the same year; from that point onwards, game theory has been included as one of the research themes of the program. At the end of 2003, the CeNDEF postdocs Diks, Tuinstra and Wagener obtained tenured positions, ensuring the continuation of the research program. In 2009 the research program was ranked as one of the three top programs at the FEB by the VSNU "Visitatiecommissie" (Quality 4.5, Productivity 4.5, Relevance 5, Viability 5). From the report of the committee: "*The group (...) is developing very fruitful projects on highly topical current issues.*"

The publication record of the year 2018 is very good. The output included 11 articles in international refereed journals, amongst which publications in the *European Economic Review* and the *Journal of Economic Dynamics and Control*, and, among others, manuscripts that were accepted for publication in the *Journal of Monetary Economics* and the *Journal of the European Economic Association*. Two PhD students, Aad Ruiter and Hao Fang, successfully defended their PhD theses in 2018.

The programme is internationally established, as is shown by excellent citation statistics (e.g. according to the Science Citation Index (SCI) in 2018 more than 800 citations of published work by group members), many invited and several keynote lectures at international seminars, conferences and workshops by various members of the research group. In the IDEAS/RePEc ranking of Top 20% institutes (<http://ideas.repec.org/top/top.netherlands.html>), CeNDEF ranks as number 11, the same position as last year. This ranking contains faculties of economics and departments; among the small institutes of the order of a research group (up to 16 researchers) CeNDEF ranks 4th on the list.

In 2018, Alex Grimaud, Rodolfo Arioli and Frieder Neunhoeffer joined the group as PhD students in the ExSIDE PhD programme.

The evaluation can be summarized in the following **SWOT analysis** of the CeNDEF activities.

**Strengths:** international reputation as an excellent research group on nonlinear dynamics and complexity applications in economics and finance, high scientific impact (e.g., with both having been cited over 650 times (Web of Science), Brock and Hommes (*Econometrica* 1997), and Brock and Hommes (*JEDC* 1998), are two of the best cited journal articles co-authored by a Dutch economist), regular international visitors, active seminars and international workshops, own working paper series, frequently visited website, good facilities for computing and travel.

**Weaknesses:** relatively few publications in top mainstream journals, where multi-disciplinary work and non-mainstream approach such as agent-based modelling and complexity modelling are getting accepted only slowly; the number of links with practitioners and policy makers has been relatively low, but is increasing.

**Opportunities:** development of UvA Graduate School in Economics; application of group-specific know-how to core economic problems, to demonstrate in this way the value of the programme's characteristic approach; developing more policy oriented research, e.g. through a new project on heterogeneous expectations in macro economics and monetary policy; for example, there are close collaborations with the UvA Institute for Advanced Study, Statistics Netherlands and with researchers and policy makers at DNB.

**Threats:** A multidisciplinary group is likely to be handicapped when evaluated in a mono-disciplinary environment; and the complexity of the tools used may turn out to be an impediment at disseminating the research approach.

## 7.4 Resources and Funding

The budget received from ASE-RI covers on average one conference per researcher per year. A budget of the Faculty covers some of the costs for the Economics Colloquia; another budget of the Tinbergen Institute covers the costs of joint research seminars *Cooperative Behaviour, Strategic Interaction and Complex Systems - CSC* together with the VU mathematical economics group.

The group has been very successful in obtaining additional external funding for individual PhD students (NWO Talent grants). Moreover, **CeNDEF is part of several international consortia that obtained grants:**

- A grant (297,000 euro for Dutch team) has been obtained from the Open Research Area joint funding scheme 2015 for “Behavioral and Experimental Analyses in Macro-finance” (BEAM) (project leaders: Nobuyuki Hanaki, Martin Weber and Jan Tuinstra, September 2016 –August 2019).
- An Additional Research Priority Area grant Complex Human Systems Lab (300,000 euro per year from 2016 onwards) has been obtained from the University of Amsterdam.
- For 2017-2020 funding has been obtained in a Marie Curie Innovative Training Network “Expectations and Social Influence Dynamics in Economics (ExSIDE)” , allowing for 5 additional PhD positions (on mobility track basis) within the program from September 2017.

## 7.5 Output

### ***Key publications***

- Kopányi-Peuker, A. G., Offerman, T., & Sloof, R. (2018). Team production benefits from a permanent fear of exclusion. *European Economic Review*, 103, 125-149. DOI: [10.1016/j.euroecorev.2018.01.005](https://doi.org/10.1016/j.euroecorev.2018.01.005)
- Bao, T., Hommes, C., & Makarewicz, T. (2017). Bubble formation and (in)efficient markets in learning-to-forecast and optimise experiments. *Economic Journal*, 127(605), F581-F609.
- Battiston, S., Farmer, J.D., Flache, A., Garlaschelli, D., Haldane, A.G., Heesterbeek, H., Hommes, C., Jaeger, C., May, R. and Scheffer, M. (2016). Complex Systems: Complexity theory and financial regulation. *Science* 351, 818-819.
- Diks, C. and Wolski, M. (2016). Nonlinear Granger Causality: Guidelines for Multivariate Analysis. *Journal of Applied Econometrics* 31, 1333-1351.
- Dockner, E. and Wagener, F. (2014). Markov perfect Nash equilibria in models with a single capital stock. *Economic Theory* 56, 585-625.
- Linde, J., Sonnemans, J. and Tuinstra, J. (2014). Strategies and evolution in the minority game: A multi-round strategy experiment. *Games and Economic Behavior* 86, 77-95.

### ***Forthcoming***

- Cornea-Madeira, A., Hommes, C., & Massaro, D. (2019). Behavioral Heterogeneity in U.S. Inflation Dynamics. *Journal of Business & Economic Statistics*. Forthcoming, available on-line. DOI: [10.1080/07350015.2017.132154](https://doi.org/10.1080/07350015.2017.132154)
- Hommes, C.H. and Lustenhouwer J. (2019), Inflation targeting and liquidity traps under endogenous credibility. *Journal of Monetary Economics*, Forthcoming
- Anufriev, M., Hommes, C.H. and Makarewicz, T. (2019), Simple forecasting heuristics that make us smart: Evidence from different market experiments, *Journal European Economic Association*, Forthcoming
- Hommes, C., Massaro, D., & Salle, I. (2019). Monetary and Fiscal Policy Design at the Zero Lower Bound: Evidence from the Lab. *Economic Inquiry*, 57(2), 1120-1140. DOI: [10.1111/ecin.12741](https://doi.org/10.1111/ecin.12741), Forthcoming
- Diks, C., Li, X. and Wu. C. (2019), Information cost, memory length and market instability, *Nonlinear Dynamics, Psychology, and Life Sciences*, Forthcoming
- Salle, I., Seppelcher, P. and Lang, D. (2019), Is the market really a good teacher? Market selection, collective adaptation and financial instability, *Journal of Evolutionary Economics*, Forthcoming
- Anufriev, M., Bao, T., Sutan and Tuinstra, J. (2019). Fee structure and mutual fund choice: An experiment, *Journal of Economic Behavior & Organization*, Forthcoming
- Koster, M. (2019). *Cost Sharing*, in: Encyclopedia of Complexity and Systems Science, editor R. Meyers, Springer, New York, Forthcoming
- Hodhod, A., Huber, S. and Vasilev, K. (2019). *Sectoral Risk Weights and Macroprudential Policy*, Journal of Banking and Finance, ISSN 0378-4266.

### *E-publication ahead of print*

Amman, H. (2019). Approximating the value function for optimal experimentation, *Macroeconomic Dynamics*, Forthcoming, available online. DOI: [10.1017/S1365100518000664](https://doi.org/10.1017/S1365100518000664)

Salle, I. L., Sénégas, M., Yıldızoğlu, M. (2019). How transparent about its inflation target should a central bank be? (2018). Carl's nonlinear cobweb. *Journal of Economic Dynamics and Control*, 91, 7-20. <https://doi.org/10.1016/j.jedc.2017.12.007>

### *Publications in numbers*

Output type	Classification	#
Articles in journals	Refereed	11
	Non-refereed	1
	Professional	2
Books or book chapters	Refereed	1
	Non-refereed	0
	Professional	0
Conference proceedings	Non-refereed	0
PhD theses		2
<b>Total</b>		<b>17</b>

### *Article in journal – refereed*

Anufriev, M., & Kopányi, D. (2018). Oligopoly game: Price makers meet price takers. *Journal of Economic Dynamics & Control*, 91, 84-103. <https://doi.org/10.1016/j.jedc.2018.02.013>

Anufriev, M., Chernulich, A., & Tuinstra, J. (2018). A laboratory experiment on the heuristic switching model. *Journal of Economic Dynamics & Control*, 91, 21-42. <https://doi.org/10.1016/j.jedc.2018.04.004>

Bao, T., Diks, C., & Li, H. (2018). A generalized CAPM model with asymmetric power distributed errors with an application to portfolio construction. *Economic Modelling*, 68, 611-621. <https://doi.org/10.1016/j.econmod.2017.03.035>

Broer, H., Hanssmann, H., & Wagener, F. O. O. (2018). Persistence Properties of Normally Hyperbolic Tori. *Regular & Chaotic Dynamics*, 23(2), 212-225.

Hommes, C., Lustenhouwer, J., & Mavromatis, K. (2018). Fiscal consolidations and heterogeneous expectations. *Journal of Economic Dynamics & Control*, 87, 173-205. <https://doi.org/10.1016/j.jedc.2017.12.002>

Hommes, C. H., Ochea, M. I., & Tuinstra, J. (2018). Evolutionary Competition Between Adjustment Processes in Cournot Oligopoly: Instability and Complex Dynamics. *Dynamic Games and Applications*, 8(4), 822-843. <https://doi.org/10.1007/s13235-018-0238-x>

Kopányi-Peuker, A. G., Offerman, T., & Sloof, R. (2018). Team production benefits from a permanent fear of exclusion. *European Economic Review*, 103, 125-149. <https://doi.org/10.1016/j.euroecorev.2018.01.005>

Lamantia, F., Negriu, A., & Tuinstra, J. (2018). Technology choice in an evolutionary oligopoly game. *Decisions in Economics and Finance*, 41(2), 335-356. <https://doi.org/10.1007/s10203-018-0215-2>

Salle, I. L., & Seppelcher, P. (2018). Stabilizing an unstable complex economy on the limitations of simple rules. *Journal of Economic Dynamics & Control*, 91, 289-317. <https://doi.org/10.1016/j.jedc.2018.02.014>

Schmitt, N., Tuinstra, J., & Westerhoff, F. (2018). Stability and welfare effects of profit taxes within an evolutionary market interaction model. *Review of International Economics*, 26(3), 691-708. <https://doi.org/10.1111/roie.12319>

Seppelcher, P., Salle, I. L., & Lavoie, M. (2018). What drives markups? Evolutionary pricing in an agent-based stock-flow consistent macroeconomic model. *Industrial and Corporate Change*, 27(6), 1045-1067. <https://doi.org/10.1093/icc/dty011>

### ***Article in journal – non-refereed***

Gardini, L., Kubin, I., Tramontana, F., & Wagener, F. (2018). Foreword to the Special Issue on "Dynamic Models in Economics and Finance". *Communications in Nonlinear Science & Numerical Simulation*, 1-1.

### ***Article in journal – professional***

Bolt, W., & van der Leij, M. (2018). Ontwrichting van tweezijdige markten door platformen. *ESB Dossier*, 103(4768S), 12-15.

Turco, E. M. (2018). Are stock buybacks crowding out real investment? Empirical evidence from U.S. firms. Paper presented at "10 years after the crash: what have we learned?", *Forum for macroeconomics and macroeconomic policies*, Berlin, Germany.

### ***Book chapter – refereed***

Schmitt, N., Tuinstra, J., & Westerhoff, F. (2018). Market Interactions, Endogenous Dynamics and Stabilization Policies. In P. Commendatore, I. Kubin, S. Bougheas, A. Kirman, M. Kopel, & G. I. Bischi (Eds.), *The Economy as a Complex Spatial System* (pp. 137-152). (Springer Proceedings in Complexity). Cham: SpringerOpen. [https://doi.org/10.1007/978-3-319-65627-4\\_7](https://doi.org/10.1007/978-3-319-65627-4_7)

### ***Dissertation – internally prepared***

Fang, H. (2018). Multivariate density forecast evaluation and nonparametric Granger causality testing

### ***Dissertation – externally prepared***

Ruiter, A. G. J. M. (2018). Price discovery with fallible choice.

## **Activities**

### ***Talk or presentation***

Dávid Kopányi (Speaker), Can successful forecasters help stabilize asset prices in a learning to forecast experiment?, BEAM-ABEE workshop 2018, Amsterdam, Netherlands, 24/08/18

Dávid Kopányi (Speaker), CORE Brown Bag seminar, Université Catholique de Louvain, Belgium

Dávid Kopányi (Speaker), Oligopoly game: Price makers meet price takers, 14th European (formerly Spain-Italy-Netherlands) Meeting on Game Theory (SING14), 16/07/18 → 18/07/18

Dávid Kopányi (Speaker), Oligopoly game: Price makers meet price takers, 45th Annual Conference of the European Association for Research in Industrial Economics, 31/08/18 → 2/09/18, Athens, Greece

Dávid Kopányi (Speaker), Prices vs. returns in Learning-to-Forecast Experiments, 11th Maastricht Behavioral and Experimental Economics Symposium (M-BEES), 4/06/18 → 5/06/18

Dávid Kopányi (Speaker), The effect of loyalty in the Kirman and Vriend (2001) fish market model, 24th International Conference on Computing in Economics and Finance, 19/06/18 → 21/06/18, Milan, Italy

Marco van der Leij (Speaker), "Dynamic Interbank Network Analysis Using Latent Space Models", Fourth Annual Conference on Network Science and Economics, 14 april 2018, Nashville, United States

Myrna Hennequin (Speaker), Managing bubbles in experimental asset markets with monetary policy, 11th Maastricht Behavioral and Experimental Economics Symposium (M-BEES), 4 Jun 2018

Anita Kopányi-Peucker (Speaker), Experience Does not Eliminate Bubbles: Experimental Evidence, Experimental Finance 2018, 14/06/18 → 22/06/18, Heidelberg, Germany

Myrna Hennequin (Speaker), Managing bubbles in experimental asset markets with monetary policy, 20 Jun 2018, Experimental Finance 2018, Heidelberg, Germany

Johan de Jong (Speaker), The Effect of Futures Markets on the Price Dynamics in Commodity Markets, 20 Jun 2018, Experimental Finance 2018, Heidelberg, Germany

Rodolfo Arioli (Speaker), ExSide Jamborée, 22 Jun 2018, Ca' Foscari University of Venice, Italy

Anita Kopányi-Peucker (Speaker), Are sunspots effective in a large crowd? - Evidence from a large-scale bankrun experiment, ESA World Meeting, 28/06/18 → 1/07/18



Myrna Hennequin (Speaker), Managing bubbles in experimental asset markets with monetary policy, 30 Jun 2018, 2018 ESA World Meeting, Berlin, Germany

Marco van der Leij (Speaker), Dynamic interbank network analysis using latent space models, 1 Jul 2018, XXXVIII Sunbelt 2018 Conference, 26/06/18 → 1/07/18, Utrecht, Netherlands

Johan de Jong (Speaker), The Effect of Futures Markets on the Price Dynamics in Commodity Markets, 1 Jul 2018

Equilibrium, Expectations & Dynamics / CeNDEF (ASE, FEB), 2018 ESA World Meeting, 28/06/18 → 1/07/18, Berlin, Germany

Myrna Hennequin (Speaker), Managing bubbles in experimental asset markets with monetary policy, 2 Jul 2018, The 9th Workshop on Theoretical and Experimental Macroeconomics, 2/07/18 → 3/07/18, Berlin, Germany

Johan de Jong (Speaker), The Effect of Futures Markets on the Price Dynamics in Commodity Markets, The 9th Workshop on Theoretical and Experimental Macroeconomics, 2 Jul 2018, Berlin, Germany

Jan Tuinstra (Speaker), Prices vs. returns in Learning-to-Forecast experiments, 20 Jul 2018, CEF 2018

Anita Kopányi-Peucker (Speaker), Are sunspots effective in a large crowd? - Evidence from a large-scale bankrun experiment, 24 Jul 2018 → 26 Jul 2018, IBSEN International Conference on Large scale Experiments, 24/07/18 → 26/07/18, United Kingdom

Anita Kopányi-Peucker (Speaker), Experience Does not Eliminate Bubbles: Experimental Evidence, BEAM - ABEE Workshop 2018: Experimental and Behavioral Analyses in Macroeconomics and Finance, 24/08/18 → 25/08/18, Amsterdam, Netherlands

Myrna Hennequin (Speaker), Experiences and expectations in asset markets: an experimental study, 24 Aug 2018, BEAM - ABEE Workshop 2018: Experimental and Behavioral Analyses in Macroeconomics and Finance, 24/08/18 → 25/08/18, Amsterdam, Netherlands

Jan Tuinstra (Speaker), Price volatility and forecasting horizons: An experimental investigation, 25 Aug 2018, BEAM-ABEE workshop 2018, Amsterdam, Netherlands

Johan de Jong (Speaker), The Effect of Futures Markets on the Price Dynamics in Commodity Markets, 25 Aug 2018, BEAM - ABEE Workshop 2018: Experimental and Behavioral Analyses in Macroeconomics and Finance, Amsterdam, Netherlands

Anita Kopányi-Peucker (Speaker), Bubbles, crashes and information contagion in large-group asset market experiments, 33rd Annual Congress of the European Economic Association and 71st European Meeting of the Econometric Society, 27/08/18 → 31/08/18, Cologne, Germany

Marco van der Leij (Speaker), Dynamic interbank network analysis using latent space models, 29 Aug 2018, 33rd Annual Congress of the European Economic Association and 71st European Meeting of the Econometric Society 27/08/18 → 31/08/18, Cologne, Germany

Frieder Neunhoeffer (Speaker), Conference of the Italian Society of Public Economics – Padova, 21 Sep 2018, XXX Annual Conference of the Italian Society of Public Economics: “Global structural changes and government challenges”, 19/09/18 → 21/09/18, Italy

Myrna Hennequin (Speaker), Experiences and expectations in asset markets: an experimental study, 21 Sep 2018, Research in Behavioral Finance Conference (RBFC) 2018, 20/09/18 → 21/09/18, Amsterdam, Netherlands

Cees Diks (Speaker), Detecting Granger Causality with a Nonparametric Information-theoretical Statistic, 26 Sep 2018, Conference on Complex Systems 2018, Thessaloniki, Greece

Frieder Neunhoeffer (Speaker), Conference on Decision Sciences – Konstanz, 25/09/18 → 28/09/18

Myrna Hennequin (Speaker), Experiences and expectations in asset markets: an experimental study, 28 Sep 2018, Nordic Conference on Behavioral and Experimental Economics (NCBEE) 2018, 28/09/18 → 29/09/18, Odense, Denmark

Marco van der Leij (Speaker) On Relations in the Unsecured and Secured Overnight Interbank Lending Markets, 28 Sep 2018, , Banco de México, Mexico

Marco van der Leij (Speaker), On relations in the unsecured and secured overnight interbank lending markets, 17 Oct 2018, Dutch Network Economics Day, 17/10/18 → 17/10/18, Amsterdam, Netherlands

Anita Kopányi-Peuker (Invited speaker), Are sunspots effective in a large crowd? - Evidence from a large-scale bankrun experiment, 12 Nov 2018, Erich Schneider Seminar, Kiel, Germany

***Publication peer-review and editorial work***

Anita Kopányi-Peuker (Reviewer) Journal of Economic Dynamics & Control (Journal)

Anita Kopányi-Peuker (Reviewer) Journal of Economic Interaction and Coordination (Journal)

Anita Kopányi-Peuker (Reviewer), Management Science (Journal)

Marco van der Leij (Member of editorial board), Network Science (Journal)

Marco van der Leij (Reviewer), Empirical Economics (Journal)

Marco van der Leij (Reviewer), Journal of Economic Dynamics & Control (Journal)

Marco van der Leij (Reviewer), Journal of Financial Stability (Journal)

Marco van der Leij (Reviewer), Sciences advances (Journal)

Florian Wagener (Editor), Dynamic Games and Applications (Journal)

Marco van der Leij (Programme Committee Member), The 7th International Conference on Complex Networks and their Applications (Event), 11 Dec 2018 → 13 Dec 2018

## 8. ACTUARIAL SCIENCE & MATHEMATICAL FINANCE

Programmeme director: Prof. dr. ir. M.H. Vellekoop  
 Section: Quantitative Economics  
 JEL-classification: C, G2  
 Starting date: 1989  
 Website: [www.ase.uva.nl/act](http://www.ase.uva.nl/act)

### 8.1 Members of the research group and research in fte's

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
<b>Antonio, K.</b>	dr.	ud	0,10	0,10	0,10	1
Berkum, F. van	msc	phd	0,24	-	-	3
<b>Berkum, F. van</b>	msc	ud	-	0,11	0,11	3
<b>Bilsen, S. van</b>	dr.	ud	0,25	0,25	0,25	1
<b>Bilsen, S. van</b>	dr.	ud	0,30	0,30	0,50	3
<b>Boonen, T.</b>	dr.	ud	0,50	0,50	0,50	1
<b>Can, U.</b>	dr.	ud	0,50	0,50	0,50	1
<b>Engel, K.</b>	msc	guest	0,00	0,00	0,00	1
Fan, Z.	msc	phd	0,80	-	-	3
<b>Gastel, L. van</b>	dr.	ud	0,11	0,08	0,07	3
<b>Hooijsma, J.</b>	msc	phd	0,40	0,27	-	3
<b>Hooijsma, J.</b>	msc	guest	-	0,00	0,00	1
<b>Kloek, T.G.</b>	msc	guest	0,00	0,00	0,00	1
Laeven, R.	prof. dr.	hgl	0,70	-	0,1	3
<b>Laeven, R.</b>	prof. dr.	hgl	-	0,50	0,42	1
<b>Li, Z.</b>	msc	phd	0,80	0,80	0,53	1
Linders, D.	dr.	postdoc	0,23	-	-	3
Petrov, M.	msc	guest	0,00	-	-	1
<b>Ronner, A.E.</b>	prof. dr.	bijz. hgl	0,10	0,10	0,10	1
<b>Schumacher, J.M.</b>	prof. dr.	guest	-	0,00	0,00	1
<b>Vellekoop, M.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Verschuren, R.</b>	msc	phd	-	-	0,13	3
<b>Yang, L.</b>	dr.	ud	-	0,17	0,80	1
<b>Yue, Y.</b>	msc	phd	0,80	0,80	0,53	3
Total 1st flow of funds			2,75	3,42	3,70	
Total 2nd flow of funds			0,00	0,00	0,00	
Total 3rd flow of funds			3,58	1,19	1,44	
Total 1st f.o.f. excl. PhD			1,95	2,62	3,17	
Total 1st-3rd flow of funds			6,33	4,61	5,14	
PhD students			3,04	1,61	1,99	

## 8.2 Programme design

Asset and liability management for insurance contracts and pension obligations can often be formulated in terms of optimal investment and consumption problems. Typical for such actuarial risk management problems are the relatively long time horizons, necessitating investment in less liquid assets and making the mitigation of interest rate risk more difficult. For pension funds, investment goals are often stated in real instead of nominal terms which complicates the dynamic optimization problem. There is also the added challenge of longevity risk, since life expectancy continues to rise faster than was predicted earlier in most Western countries. Stochastic models for liquidity, inflation, and future survival rates, and their consequences for the valuation and risk management of annuities and pension contracts therefore constitute an important area of investigation.

Supervision and regulation of insurance companies and pension funds form another important part of the research programme. Methods for risk measurement and the determination of solvency requirements have come under intensified scrutiny after the financial crisis of 2008. The new European regulatory framework Solvency II for insurers and the Dutch FTK regulation for pension funds have therefore led to many new research questions. Researchers in this programme contribute to mathematical models for market-consistent pricing in incomplete markets and to the further development of actuarial risk theory. This includes the development of robust methods for risk measurement and management that explicitly take model risk (ambiguity) into account, and the development of methods to evaluate and mitigate systemic risk in the broader financial sector. As a result, members of our research group actively participate as scientific advisors in policy discussions on the new architecture of financial regulation and supervision.

Present-day challenges in non-life insurance contracts include the detection of insurance fraud, premium rating and claims reserving, and the estimation of unreported claims. Techniques have been developed which tackle such issues by the use of Generalized Linear Mixed Models, which also be used for survival modelling, graduation, multiple-state insurance models and risk classification and as such allow the unification of several distinct actuarial subfields. The increased interest in the analysis of high-dimensional datasets has sparked renewed interest in extensions such as Generalized Additive Models, and their connection with methods in credibility theory. Both are investigated in the research group, with applications in both life insurance (in models for portfolio-specific mortality) and non-life insurance (in models for rate making and risk classification in home and property insurance contracts).

## 8.3 Programme Evaluation

The broad interests of our research group within the field of Actuarial Science and Mathematical Finance have led to a diverse set of new publications in the past year. Topics range from classical actuarial problems such as risk sharing in pension systems (Servaas van Bilsen) and churn models for policyholders in insurance (Katrien Antonio) to theoretical contributions on robustness of risk measures (Roger Laeven) and dynamic games in insurance markets (Tim Boonen). The increased availability of large datasets in non-life insurance generates new theoretical challenges, and our group started working on the relatively new statistical methods that can help to improve insurance premium calculations using prospective experience rating. These include the D-vines to model predictive distributions (Lu Yang) and risk classification schemes based on General Additive Models (Katrien Antonio, Robert Verschuren). Other papers that have been published this year are more likely to find applications in finance, such as the ones dealing with optimal stopping and self-exciting jumps in asset pricing models (Laeven).

Our research results have been presented at many international conferences and our visibility was further enhanced by two doctorate ceremonies in 2018 (Frank van Berkum and Marko Petrov) and our involvement in the organisation of a number of conferences and meetings: the European Actuarial Journal Conference (Katrien Antonio), the Winterschool on Mathematical Finance (Michel Vellekoop) and an international workshop organized by the QED network (Umut Can). Lu Yang received recognition for her work in the form of a grant from the scholar-in-residence program of the Centre de Recherches Mathématiques in Montreal for a three-month research stay, and Servaas van Bilsen obtained a TIAA Institute grant for his research proposal on optimal variable annuity design. He shares the grant with co-

author Daniël Linders from the University of Illinois at Urbana-Champaign, who will join our group on a new tenure track position.

To make sure that our theoretical work continues to be relevant for the outside world, we actively maintain a strong network with the international academic community but also with Dutch and international professionals working in the financial industry or in pension funds and insurance companies. Roger Laeven continued his work as editor of *Insurance: Mathematics and Economics* and as the Academic Member of the Insurance and Reinsurance Stakeholder Group (IRSG) of the European Insurance and Occupational Pensions Authority. Frank van Berkum and Michel Vellekoop were members of the Committee and Working Group that developed the official 2018 mortality prognosis for Dutch pension funds and insurance companies. Michel Vellekoop also wrote a report, with co-authors from Tilburg and Dutch pension funds, for a subcommittee of the Social Economic Council of the Netherlands (SER) with proposals to improve the redistribution of longevity risk in the new Dutch pension contract. Servaas van Bilsen coordinated a series of Netspar seminars which generate scientific input for policy makers who are currently redesigning the Dutch pension system.

**Strengths:** The composition of our tenure tracks reflects the broad research profile of the group. We therefore expect to continue to play an important role in the national and international research networks which study problems in actuarial science and mathematical finance.

**Weaknesses:** The group has only a few senior researchers.

**Opportunities:** Plans to reform the Dutch pension system will lead to interesting practical as well as theoretical questions and our expertise in this field will therefore be particularly appreciated. Our work in theoretical statistics makes us a natural partner for other academics and professionals in insurance companies and pension funds who are intensifying their use of data science.

**Threats:** The number of Bachelor and Master theses that need to be supervised puts extra pressure on all staff members in the group.

## 8.4 Resources and Funding

2017-2021: Sponsoring of the research project “Risk and Regulation” (in the chair of Risk and Insurance), Verbond van Verzekeraars.

2017-2021: VIVAT PhD Research Grant, jointly with Econometrics Group.

## 8.5 Output

### *Key publications*

van Berkum, F., Antonio, K., & Vellekoop, M. (2017). A Bayesian joint model for population and portfolio-specific mortality. *ASTIN Bulletin*, 47(3), 681-713.

Boonen, T. J., Tsanakas, A., & Wüthrich, M. V. (2017). Capital allocation for portfolios with non-linear risk aggregation. *Insurance: Mathematics & Economics*, 72, 95-106.

Can, S. U., Einmahl, J. H. J., Khmaladze, E. V., & Laeven, R. J. A. (2015). Asymptotically distribution-free goodness-of-fit testing for tail copulas. *The Annals of Statistics*, 43(2), 878-902.

Laeven, R. J. A. & M. A. Stajic (2014). Robust portfolio choice and indifference valuation. *Mathematics of Operations Research* 39, 1109-1141.

Shi, P., & Yang, L. (2018). Pair Copula Constructions for Insurance Experience Rating. *Journal of the American Statistical Association*, 113(521), 122-133.

### *E-publication ahead of print*

Yang, L., & Shi, P. (2019). Multiperil rate making for property insurance using longitudinal data. *Journal of the Royal Statistical Society. Series A: Statistics in Society*, 182(2), 647-668. <https://doi.org/10.1111/rssa.12419>

### *Publications in numbers*

<b>Output type</b>	<b>Classification</b>	<b>#</b>
Articles in journals	Refereed	13
	Non-refereed	0
	Professional	1
	Popular	0
Books or book chapters	Refereed	0
	Non-refereed	0
	Professional	0
	Popular	0
Report	Professional	1
Conference proceedings		0
PhD theses		2
<b>Total</b>		<b>17</b>

### *Article in journal – refereed*

Asimit, A. V., & Boonen, T. J. (2018). Insurance with multiple insurers: A game-theoretic approach. *European Journal of Operational Research*, 267(2), 778-790. <https://doi.org/10.1016/j.ejor.2017.12.026>

Bellini, F., Laeven, R. J. A., & Rosazza Gianin, E. (2018). Robust return risk measures. *Mathematics and Financial Economics*, 12(1), 5-32. <https://doi.org/10.1007/s11579-017-0188-x>

Boonen, T. J., Pantelous, A. A., & Wu, R. (2018). Non-cooperative dynamic games for general insurance markets. *Insurance: Mathematics & Economics*, 78, 123-135. <https://doi.org/10.1016/j.insmatheco.2017.12.001>

Boswijk, H. P., Laeven, R. J. A., & Yang, X. (2018). Testing for self-excitation in jumps. *Journal of Econometrics*, 203(2), 256-266. <https://doi.org/10.1016/j.jeconom.2017.11.007>

Henckaerts, R., Antonio, K., Clijsters, M., & Verbelen, R. (2018). A data driven binning strategy for the construction of insurance tariff classes. *Scandinavian Actuarial Journal*, 2018(8), 681-705. <https://doi.org/10.1080/03461238.2018.1429300>

Kaas, R., Laeven, R., Lin, S., Tang, Q., Willmot, G., & Yang, H. (2018). *IME's Editorial Board. Insurance: Mathematics & Economics*, 78, A1-A3. <https://doi.org/10.1016/j.insmatheco.2017.08.008>

Kaas, R., Laeven, R., Lin, S., Tang, Q., Willmot, G., & Yang, H. (2018). In memoriam Marc Goovaerts. *Insurance: Mathematics & Economics*, 80, A1. <https://doi.org/10.1016/j.insmatheco.2018.03.006>

Krätschmer, V., Ladkau, M., Laeven, R. J. A., Schoenmakers, J. G. M., & Stadje, M. (2018). Optimal stopping under uncertainty in drift and jump intensity. *Mathematics of operations research*, 43(4), 1177-1209. <https://doi.org/10.1287/moor.2017.0899>

Schumacher, J. M. (2018). A multi-objective interpretation of optimal transport. *Journal of Optimization Theory and Applications*, 176(1), 94-119. <https://doi.org/10.1007/s10957-017-1206-0>

Schumacher, J. M. (2018). Distortion risk measures, ROC curves, and distortion divergence. *Statistics & Risk Modeling*, 35(1-2), 35-50. <https://doi.org/10.1515/strm-2017-0012>

Shi, P., & Yang, L. (2018). Pair Copula Constructions for Insurance Experience Rating. *Journal of the American Statistical Association*, 113(521), 122-133. <https://doi.org/10.1080/01621459.2017.1330692>

Stripling, E., vanden Broucke, S., Antonio, K., Baesens, B., & Snoeck, M. (2018). Profit maximizing logistic model for customer churn prediction using genetic algorithms. *Swarm and Evolutionary Computation*, 40, 116-130. <https://doi.org/10.1016/j.swevo.2017.10.010>

van Bilsen, S., & Bovenberg, A. L. (2018). The Decumulation Period of a Personal Pension with Risk Sharing: Investment Approach Versus Consumption Approach. *Journal of Pension Economics and Finance*.

***Article in journal – professional***

De Waegenaere, A., Janssen, P., Joseph, A., & Vellekoop, M. (2018). Langer zullen we delen. *Actuaris*, 25(6), 28-29.

***Report – professional***

de Boer, B. L., van Iersel, C. A. M., Melenberg, B., de Mik, J., Plat, H. J., Slagter, E. J., Vellekoop, M.H., Waucomont, R.E.J.M. & van der Winden, M. R. (2018). Prognosetafel AG2018. Utrecht: Koninklijk Actuarieel Genootschap.

***Dissertation – internally prepared***

Berkum, F. van (2018). Models for population-wide and portfolio-specific mortality.

Petrov, M. (2018). Essays on derivatives pricing.

## 9. MInt - MACRO AND INTERNATIONAL ECONOMICS

<b>Programme title</b>	MInt – Macro and International Economics
<b>Name programme director</b>	Prof. dr. F.J.G.M. Klaassen
<b>Department</b>	Economics & Econometrics
<b>JEL-Classification</b>	E, F, H
<b>Website</b>	<a href="http://ase.uva.nl/mint">http://ase.uva.nl/mint</a>

### 9.1 Members of the research group and research in FTEs

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
<b>Beetsma, R.</b>	prof. dr.	hgl	0,25	0,25	0,25	1
<b>Beetsma, R.</b>	prof. dr.	hgl	0,25	0,25	0,25	3
Bonthuis, B.	msc	guest	0,00	0,00	-	1
Chan, S.	msc	phd	0,53	-	-	1
Chan, S.	msc	guest	0,00	0,00	-	1
Chen, D.	msc	phd	0,53	-	-	3
Chen, D.	msc	guest	0,00	-	-	1
<b>Chen, D.</b>	dr.	postdoc	-	0,16	0,16	3
<b>Ciminelli, G.</b>	msc	guest	0,00	0,00	0,00	1
Ciurila, N.	msc	phd	0,80	0,60	-	1
Clymo, A.	dr.	postdoc	0,80	0,47	-	1
<b>Dimitrov, D.</b>	msc	phd	-	-	0,60	3
<b>Ewijk, C. van</b>	prof. dr.	hgl	0,08	0,08	0,08	1
<b>Ewijk, C. van</b>	prof. dr.	hgl	0,05	0,05	-	2
Ewijk, C. van	prof. dr.	hgl	0,30	0,30	0,34	3
Furtuna, O.	msc	phd	0,80	0,27	-	1
Furtuna, O.	msc	guest	-	0,00	-	1
<b>Giuliodori, M.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Hanson, J.</b>	msc	guest	0,00	0,00	0,00	1
<b>Houben, A.</b>	prof. dr.	hgl	0,00	0,00	0,00	1
<b>Jakucyonite, E.</b>	msc	phd	0,80	0,47	-	1
<b>Jager, H.</b>	prof. dr.	guest	0,00	0,00	0,00	1
<b>Kastelein, P.</b>	msc	phd	0,20	0,20	0,80	2
<b>Klaassen, F.J.G.M.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Knot, K.</b>	prof. dr.	hgl	0,00	0,00	0,00	1
Kwaak, C. van der	msc	phd	0,40	-	-	2
Kwaak, C. van der	msc	guest	0,00	-	-	1
<b>Leefmans, N.</b>	drs.	docent	0,00	0,00	0,00	1
<b>Lekniute, Z.</b>	msc	guest	0,00	0,00	0,00	1
<b>Lorié, J.A.</b>	dr.	guest	0,00	0,00	0,00	1
Maurik, R. van	msc	phd	0,80	0,54	-	3
<b>Maurik, R. van</b>	msc	guest	-	0,00	0,00	1
Mavromatis, K.	dr.	ud	0,50	0,13	-	1
Micevska Scharf, M.	dr.	postdoc	0,03	-	-	2
<b>Neamtu, I.</b>	msc	phd	-	0,27	0,80	1
<b>Olijslagers, S.</b>	msc	phd	-	-	0,63	3
<b>Parlevliet, J.</b>	msc	guest	0,00	0,00	0,00	1
<b>Proehl, E.</b>	dr.	ud	-	-	0,17	1
<b>Romp, W.E.</b>	dr.	ud	0,50	0,42	0,25	1
Singh, S.	msc	phd	0,53	-	-	1
Singh, S.	msc	guest	0,00	0,00	-	1



<b>Spronsen, J.</b>	msc	phd	-	-	0,27	1
<b>Stoltenberg, C.A.</b>	dr.	uhd	0,50	0,50	0,50	1
Teulings, C.N.	prof dr	hgl	0,10	0,10	-	1
Teulings, R.	msc	phd	0,67	-	-	1
Teulings, R.	msc	guest	0,00	0,00	-	1
<b>Veestraeten, D.</b>	dr.	ud	0,00	0,00	0,07	1
<b>Vos, S.J.</b>	drs.	guest	0,00	0,00	0,00	1
Westerhout, E.	dr.	ud	0,17	-	-	1
<b>Wijnbergen, S.J.G.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Zhuo, R.</b>	msc.	phd	0,80	0,80	0,60	1
<b>Zouain Pedroni, M.</b>	dr.	ud	0,50	0,50	0,50	1
Total 1st flow of funds			9,83	6,36	4,99	
Total 2nd flow of funds			0,68	0,25	0,80	
Total 3rd flow of funds			1,88	1,25	1,98	
Total 1st f.o.f. excl. PhD			4,10	3,95	3,32	
Total 1st-3rd flow of funds			12,39	7,86	7,77	
PhD students			6,86	3,15	3,70	

## 9.2 Programme design

### Objective

The programme uses empirical and theoretical methods to analyse important economic issues in the areas of macroeconomics and international economics. Special emphasis is given to the evaluation of existing fiscal and monetary policies and the question how these policies can be improved upon. Dissemination of the results takes place mainly via international, refereed scientific journals, but also via more policy-oriented outlets.

### Motivation

The economic growth that a country experiences not only has direct effects on the available resources, it can also have important indirect effects through, for example, the stability of the social and political environment. Similarly, the business cycle fluctuations countries face can have far-reaching consequences to many, especially if these fluctuations mainly fall on subgroups within the population. It is therefore crucial to thoroughly understand the characteristics of economic developments, the factors behind them, and to what extent and how governments can affect these developments. The recent international sovereign debt crisis and discussions on the sustainability of pension systems exemplify this.

### Themes

Major international economic developments and policy debates generate a continuous stream of research ideas for our group. The resulting projects are often intertwined, but we choose to categorize them into the following (interrelated) themes. Only a selection of all projects will be discussed.

#### *Fiscal policy and sovereign debt*

Fiscal policy is a crucial aspect of macroeconomics. Given that government expenditures are a substantial fraction of GDP, they play an important role in welfare redistribution, and financing these expenditures through debt and taxes is likely to have important effects on, for example, financial markets, labour force participation, and investment. Roel Beetsma, Massimo Giuliodori, and Jesper Hanson analyse the effects of auctions on sovereign bond yields at secondary markets. They document that auctions result in a temporary increase in yields at markets of other euro area countries. So it may be optimal for debt management offices to coordinate debt issuance, in order to avoid concurrent auctions. Gabriele Ciminelli and Massimo Giuliodori analyse the effects of tax-based consolidations on income inequality, output and labour market conditions. They find that that such policy reduces income inequality, but at the cost of weaker economic activity.

#### *Financial fragility and macroeconomics*

This theme was also stimulated by the recent crises, showing the interaction between banking distress, fiscal policy to mitigate financial crisis, public debt, sovereign risk, international spill overs, and banking

supervision. Ioana Neamtu and Sweder van Wijnbergen study contingent convertible capital (CoCos), which are bonds issued by banks that can be written off or converted to equity in times of distress. CoCos have played a major role in meeting the new higher capital requirements banks are confronted with since the global financial crisis. The authors study the Swiss CoCo regulation for large banks and show that the current CoCo structure harms the bank in case of crisis, instead of helping it. Egle Jakucionyte and Sweder van Wijnbergen study how depreciations of currencies in Eastern Europe in October 2008, where the private sector had borrowed heavily in foreign currency, has created debt overhang, and they find this a potential reason for the prolonged recession. Aerdts Houben aims to establish the effectiveness of macro-prudential policies across advanced and emerging economies. Effectiveness is assessed on the basis of the impact on broad credit aggregates as well as on substitution effects from bank to non-bank credit.

#### *Monetary economics and policy*

Monetary policy is used throughout the world to accomplish important macroeconomic objectives such as price stability, exchange rate stability, and/or full employment. In response to the Great Financial Crisis, central banks around the world have adopted a series of non-standard policy measures. One is forward guidance, where the central bank informs the public about its intended future monetary policies. In one project Gabriele Ciminelli empirically investigates whether forward guidance helps to explain government bond yields, inflation expectations and exchange rates. Kostas Mavromatis studies the macroeconomic effects of forward guidance when agents are boundedly rational and form heterogeneous expectations about the future stance of monetary policy. He finds that such heterogeneity may either delay the recovery of the economy, or make it even faster depending on the degree of heterogeneity and the speed of learning of agents.

#### *Foreign exchange market*

The foreign exchange market is the largest financial market in the world. Many countries have managed or fixed exchange rates. Speculative attacks on them can have serious economic and societal consequences. Franc Klaassen, Kostas Mavromatis, and Rui Zhuo study exchange market pressure, that is, the pressure on a currency to depreciate, and the consequences for monetary policy. Dirk Veestraeten examines exchange rate dynamics under the prospect of (potential) future shifts in the regime, such as the move towards a fixed exchange rate. He studies the transition of the pound back to the gold standard in the 1920s and the claim by Keynes that the prospect of such a return at the first instance of hitting the pre-war parity actually fuelled the appreciation back to gold in April 1925 at an overvalued value. Extending the tools of stochastic process switching he can generate precisely the type of overvaluation that Keynes saw.

#### *Pensions*

Research projects of Roel Beetsma, Damiaan Chen, Nicoleta Ciurila, Casper van Ewijk, Pim Kastelein, Ron van Maurik, Ward Romp, Siert Vos, and Sweder van Wijnbergen focus on the optimal design of pensions systems, which is heavily debated at present, and their sustainability and the consequences of changing them. For example, Roel Beetsma and Damiaan Chen model the decision of individuals to participate in a collective pension scheme as an (American) option with approximately infinite exercise dates, and they investigate whether the Dutch pension scheme would be stable in the absence of mandatory participation. Roel Beetsma, Ron van Maurik, and Ward Romp have constructed a unique comprehensive dataset of pension reforms for a broad sample of OECD countries since 1970. They find that many pension reforms are triggered by problems in the government's budget, despite the fact that pension reforms are primarily aimed at the longer run. Casper van Ewijk investigates the relation between pension wealth and GDP and concludes that funded pensions contribute to economic growth. In particular, funded pensions create deeper capital markets and make it easier for firms to finance their investments.

#### *Inequality*

Several measures of inequality have increased over the past decades, something that has also been communicated by Piketty in his recent book. This, and the fact that the economics profession with the help of computers has been able to tackle ever more complex models with heterogeneous agents makes inequality an increasingly important research theme. One question is how business cycles influence inequality. A key methodological problem is that the wealth distribution moves stochastically over time in the presence of aggregate risk. Elisabeth Proehl proposes a discretization technique to approximate the

wealth distribution, using results from the applied mathematics literature. Marcelo Pedroni studies how governments should tax capital and labour income. Such taxation reduces inequality, but at the expense of distorting individuals' decisions. Ultimately, the optimal taxes must weigh these cost and benefits and he provides a quantitative answer to this question. Christian Stoltenberg and Swapnil Singh study the relationship between income and consumption inequality. They explain why the present workhorse heterogeneous agent models are not able to capture some salient features of the data, and they show how incorporating the extra information individuals have about their future income improves the fit with the data.

#### *Climate change*

Climate change is one of the main risks the economy will face in the upcoming decades. How to value far out in the future but possibly catastrophic risks? Several models have been developed to quantify the impact of climate change on the economy, for example the DICE model of the 2018 Nobel Laureate William Nordhaus. Stan Olijslagers and Sweder van Wijnbergen develop a model with more realistic preferences and show that the effect on quantifying the impact of climate change on the economy is large.

### **9.3 Programme evaluation**

In 2018 MInt published 10 articles in international refereed journals, and there are 7 of such publications forthcoming. Roel Beetsma and the other members of the European Fiscal Board finished their Annual Report, which was presented to the College of EU Commissioners and the Ecofin. Klaas Knot, president of the Dutch Central Bank and member of MInt, gave his guest lecture to our students. Roel Beetsma and John Loric stressed the economic aspects in the political discussion on whether to abolish the dividend tax, concluding in favor of such an abolishment. Patrick Kehoe from Stanford visited MInt, the first in a sequence of planned visits. MInt was also successful at the international job market, where we recruited Albert Jan Hummel and Jonna Olsson for tenure track positions starting next year.

The students of the group have also done well. Oana Furtuna, Egle Jakucionyte, Rutger Teulings, Nicoleta Ciurila, Jesper Hanson, Murat Kotan, and Gabriele Ciminelli obtained their PhDs. Pim Kastelein continued his PhD project financed by an NWO Research Talent grant. Ioana Neamtu had a successful internship at the Bank of England.

The year 2018 experienced some changes in the composition of the group. Patrick Kehoe (Stanford) and Paul van den Noord (former OECD) accepted a guest appointment, and Hans Vijlbrief, president of the influential Eurogroup working group, started as a professor by special appointment. Daniel Dimitrov, Josha van Spronsen, and Eva Janssens joined from the Tinbergen Institute MPhil program, the latter on a PhD project financed by an NWO Research Talent grant. Stan Olijslagers also started his PhD. More new PhD students will start next year. Nicoleta Ciurila left and started working at the CPB (Netherlands Bureau for Economic Policy Analysis), Jesper Hanson moved to the IMF, and Gabriele Ciminelli continued his position at the IMF. We continue to stimulate the coherence of the group by seminars, joint lunches, drinks, and other activities.

The visibility of the group and the interaction with the academic community have been further enhanced through joint papers, numerous external presentations, conference participations, contacts with renowned universities (including the University of Chicago, London School of Economics, New York University, Stanford University, University College London, University of Oxford, and Yale University), and participation in networks such as Netspar, where Casper van Ewijk is the director. We have a seminar series with well-known speakers, which is organised jointly with the VU University Amsterdam and funded by the Tinbergen Institute. The programme is being noticed by the outside world, for instance reflected by invitations for presentations, contributions to research volumes, referee activities, and non-academic exposure.

There are intensive contacts with policy institutions via visitorships and joint research papers (Bank of Canada, Bank of England, CPB, Deutsche Bundesbank, ECB, European Commission, European Fiscal Board, Federal Reserve Bank of Minneapolis, ILO, IMF, OECD, World Bank, WTO, among others), via Preadviesen for the Koninklijke Vereniging voor de Staathuishoudkunde, via joint positions, consultancy work (ECB), advisory positions (DNB), seminars, teaching (by employees of DNB), and memberships of several advisory committees for the EU, ECB, World Economic Forum, BIS, IMF, and the Dutch government, such as the Social and Economic Council of the Netherlands (SER). There are also direct

contacts with several Dutch ministers and members of parliament, also in parliamentary hearings, on topics such as pension reform, financial sector reform, and general macroeconomic policy.

MIInt has collaborations with the business sector, such as APG, Atradius, a.s.r. Vermogensbeheer, Bedrijfstakpensioenfondsen Detailhandel, BNG Vermogensbeheer, MN, Nuon, and SEO Economisch Onderzoek. And MIInt takes part in public debates on issues such as health care, pension reform and reform of the banking sector. Particularly Roel Beetsma, Casper van Ewijk, and Sweder van Wijnbergen are frequently asked by radio and television channels to comment on such topics, and they regularly write for opinion pages of quality newspapers. Another sign of the societal relevance is that many BSc and MSc students take our courses and write their theses at MIInt. Those students also offer ways to disseminate insights from research on key (inter)national events and debates to society.

### ***Strengths***

Good and relevant productivity and good (inter)national reputation. High societal relevance: numerous contacts with policy makers, businesses, media, and so on. Strong PhD program. Solid funding base, not only because we serve many BSc and MSc students, but also because of our connections to the non-academic world. Coherent group. Good seminar series, joint with the VU.

### ***Weaknesses***

We experience severe competition in the job market, especially from financial and policy institutions. Because of good outside options, it is easy to lose good researchers and not always easy to convince excellent undergraduate students to pursue a PhD.

### ***Opportunities***

We are trying to increase external funding so as to enlarge the group. Our expanding contacts with the financial industry generate opportunities in this regard. We have contacts with many BSc and MSc students and alumni, which creates opportunities for the research group, for example through their contacts at policy institutions and businesses. We wish to further exploit our international contacts.

### ***Threats***

It is hard to attract top tenure trackers. The increase in the number of students, which by itself is good, makes it difficult for the existing staff to have enough time for research. Another threat comes from the decreasing funding for research, partly because of the UvA allocation model.

## **9.4 Resources and Funding**

To finance our conferences, traveling, seminars, visitors, and so on, we use first-stream resources from the government, funds from the ASE Research Institute, the Tinbergen Institute, and the following other resources. The successful cooperation between Roel Beetsma and MN, one of the largest pension administrators and pension wealth managers in the Netherlands, has continued. The company sponsors the MN Chair in Pension Economics and two PhD students. Moreover, Casper van Ewijk uses a European (NWO-ORA) subsidy on social security contributions and wages. His own research time is also to a large extent sponsored by Netspar. Henk Jager has obtained an NWO doctoral grant for teachers. Paul van den Noord obtained funds from Nomura Foundation, Tokyo. Pim Kastelein's research, supervised by Roel Beetsma and Ward Romp, is financed by a four-year NWO Research Talent grant, as is Eva Janssens' research, partly supervised by Christian Stoltenberg. Damiaan Chen's postdoc position is partly financed by a Netspar grant, obtained by Roel Beetsma and Sweder van Wijnbergen, and Casper van Ewijk uses another Netspar grant.

## 9.5 Research output

### ***Key publications***

Beetsma, R.M.W.J., Cimadomo, J., Furtuna, O. & Giuliodori, M. (2015). The confidence effects of fiscal consolidations. *Economic Policy*, 30 (83), 439-489.

Beetsma, R.M.W.J., Cukierman, A., & Giuliodori, M. (2016). The Political Economy of Redistribution in the U.S. in the Aftermath of World War II - Evidence and Theory. *American Economic Journal. Economic Policy*, 8(4), 1-40. DOI: 10.1257/pol.20140193

Buhai, S.I., Portela, M.A. Teulings, C.N. & Van Vuuren, A. (2014). Returns to tenure or seniority? *Econometrica*, 82, 705-730.

Kirchner, M., & van Wijnbergen, S. (2016). Fiscal deficits, financial fragility, and the effectiveness of government policies. *Journal of Monetary Economics*, 80, 51-68.

Kriwoluzky, A. & Stoltenberg, C.A. (2015). Monetary Policy and the Transaction Role of Money in the United States. *Economic Journal*, 125, 1452-1473.

Schabert, A. & Van Wijnbergen, S.J.G. (2014). Sovereign default and the stability of inflation targeting regimes. *IMF Economic Review*, 62, 261-287.

Van Wijnbergen, S. J. G., & Homar, T. (2016). Bank recovery and economic recovery after Financial Crises. *Journal of Financial Intermediation*.

### ***Forthcoming publications***

Beetsma, R.M.W.J., Giuliodori, M., Hanson, J. & Jong, F.J.C.M. de (2019). Cross-Border Auction Cycle Effects of Sovereign Bond Issuance in the Euro Area. *Journal of Money, Credit and Banking*, forthcoming.

Beetsma, R.M.W.J., Westerhout, E.W.T.M. (2019). A comparison of nominal and indexed debt under fiscal constraints, *Journal of International Money and Finance*, forthcoming.

Beetsma, R.M.W.J., Debrun, X., Fang, X., Kim, Y., Lledó, V., Mbaye, S., Zhang, X. (2019). Independent fiscal councils: Recent trends and performance, *European Journal of Political Economy*, forthcoming.

Ciminelli, G., Ernst, E., Giuliodori, M. & Merola, R. (2019). The Composition Effects of Tax-based Consolidations on Income Inequality. *European Journal of Political Economy*, forthcoming.

Cizel, J. J., Frost, J., Houben, A.C.F.J. & Wierds, P. J. (2019). Effective Macroprudential Policy: Cross-Sector Substitution from Price and Quantity Measures. *Journal of Money, Credit and Banking*, forthcoming.

Franses, P.H., & Janssens, E.F. (2019). Spurious Principal Components. *Applied Economics Letters*, forthcoming.

Kastelein, P.B. & Romp, W.E. (2019). Pension Fund Restoration Policy in General Equilibrium. *Macroeconomic Dynamics*, forthcoming.

### *Publications in numbers*

<b>Output type</b>	<b>Classification</b>	<b>#</b>
Articles in journals	Refereed	10
	Non-refereed	0
	Professional	8
	Popular	4
Books or book chapters	Refereed	2
	Non-refereed	1
	Professional	0
	Popular	0
Reports	Professional	2
Conference proceedings		0
PhD theses		7
<b>Total</b>		<b>34</b>

#### *Article in journal – refereed*

Beetsma, R., Giuliadori, M., Hanson, J., & de Jong, F. (2018). Bid-to-cover and yield changes around public debt auctions in the euro area. *Journal of Banking & Finance*, 87, 118-134. <https://doi.org/10.1016/j.jbankfin.2017.10.006>

Bijlsma, M., Bonekamp, J., van Ewijk, C., & Haaijen, F. (2018). Funded Pensions and Economic Growth. *De Economist*, 166(3), 337-362. <https://doi.org/10.1007/s10645-018-9325-z>

Boermans, M. A., & van Wijnbergen, S. (2018). Contingent convertible bonds: Who invests in European CoCos? *Applied Economics Letters*, 25(4), 234-238. <https://doi.org/10.1080/13504851.2017.1310995>

Hommel, C., Lustenhouwer, J., & Mavromatis, K. (2018). Fiscal consolidations and heterogeneous expectations. *Journal of Economic Dynamics & Control*, 87, 173-205. <https://doi.org/10.1016/j.jedc.2017.12.002>

Lekniute, Z., Beetsma, R., & Ponds, E. (2018). A value-based assessment of alternative US state pension plans. *Journal of Pension Economics and Finance*, 17(2), 129-169. <https://doi.org/10.1017/S1474747216000214>

Mavromatis, K. (2018). U.S. Monetary Regimes and Optimal Monetary Policy in the Euro Area. *Journal of Money, Credit and Banking*, 50(7), 1441-1478. <https://doi.org/10.1111/jmcb.12503>

Singh, S., & Beetsma, R. (2018). Optimal Monetary Policy under Sectoral Interconnections. *De Economist*, 166(3), 309-336. <https://doi.org/10.1007/s10645-018-9327-x>

Teulings, C. N., Ossokina, I. V., & de Groot, H. L. F. (2018). Land use, worker heterogeneity and welfare benefits of public goods. *Journal of Urban Economics*, 103, 67-82. <https://doi.org/10.1016/j.jue.2017.10.004>

Van Der Heijden, M., Beetsma, R., & Romp, W. (2018). “Whatever it takes” and the role of Eurozone news. *Applied Economics Letters*, 25(16), 1166-1169. <https://doi.org/10.1080/13504851.2017.1403555>

van Leeuwen, B., Ploeanu, A-P., & Foldvari, P. (2018). Publishing ideas: The factors determining the number of book titles. *ACTA OECONOMICA*, 68(3), 443-466. <https://doi.org/10.1556/032.2018.68.3.6>

### **Article in journal – professional**

- Aarden, T., van Dijk, T., & Hanson, J. (2018). De argumenten voor een Europese stabilisatiefunctie zijn helemaal niet zo sterk. *Economisch-Statistische Berichten*, 103(4764), 348-351.
- Akerboom, S., Houben, A., & Reijnders, D. (2018). Central bank digital currencies: alternatives, benefits and risks. *The Journal for Money and Banking - Bančni Vestnik*, 67(11), 61-65.
- Beetsma, R., Cugnasca, A., Eliofotou, P., Orseau, E., & Santacroce, S. (2018). Stabiliteits- en Groeipact is toe aan grondige herziening. *Economisch-Statistische Berichten*, 103(4767), 520-523.
- Beetsma, R. M. W. J., & Lorie, J. A. (2018). Schaf de dividendbelasting af. *Weekblad voor Fiscaal Recht*, 147(7253), 1143-1148. [164].
- Beetsma, R., & Vos, S. (2018). Bestedings- en vermogenseffecten van kapitaalgedekte pensioenen en de huizenmarkt tijdens de lange recessie na 2008. *Tijdschrift voor Pensioenvraagstukken*, 2018(4), 22-27. [30].
- Beetsma, R., van Maurik, R., Vos, S., & Wannings, C. (2018). Meer financiële veiligheid door meer pensioenbeleggingen. *Economisch-Statistische Berichten*, 103(4759), 136-138.
- Ewijk, C. van(2018). Consensus over Pensioen. *Economisch-Statistische Berichten*, 103(4762), 267.
- Giudice, G., Hanson, J., & Kontolemis, Z. (2018). Economic Resilience in EMU. *Quarterly Report on the Euro Area*, 17(2), 9-15

### **Article in journal – popular**

- Beetsma, R. M. W. J., & Gradus, R. H. J. M. (2018). Europese Commissie moet zich hard opstellen tegenover Italië en vervolgstappen zetten. *Het Financieele Dagblad*, October 30, 2018.
- Beetsma, R. M. W. J. (2018). Hervorming eurozone vereist strenge begrotingsregels én delen van risico's. *Het Financieele Dagblad*, May 22.
- Beetsma, R. M. W. J., & Gradus, R. H. J. M. (2018). IMF slaat plank mis met pleidooi voor budgettaire expansie. *Het Financieele Dagblad*, February 6.
- Beetsma, R. M. W. J., & Gradus, R. H. J. M. (2018). Financiële meevallers moeten gewoon terugvloeien naar de staatskas. *Het Financieele Dagblad*, January 12.

### **Book or book chapters - refereed**

- Haan, J. de, & Parlevliet, J. (Eds.) (2018). *Structural Reforms: Moving the Economy Forward*. Cham: Springer. <https://doi.org/10.1007/978-3-319-74400-1>
- Buzási, K., & Földvári, P. (2018). Languages, human capital and well-being in Sub-Saharan Africa. In M. Gazzola, T. Templin, & B-A. Wickström (Eds.), *Language Policy and Linguistic Justice: Economic, Philosophical and Sociolinguistic Approaches* (pp. 287-312). Cham: Springer. [https://doi.org/10.1007/978-3-319-75263-1\\_9](https://doi.org/10.1007/978-3-319-75263-1_9)

### **Book or book chapter – non-refereed**

- Beetsma, R. M. W. J., & Debrun, X. (Eds.) (2018). *Independent Fiscal Councils: Watchdogs or lapdogs?* London: CEPR Press.

### **Report – Professional**

- Thygesen, N., Beetsma, R., Bordignon, M., Duchêne, S., & Szczurek, M. (2018). *Assessment of the fiscal stance appropriate for the euro area in 2019*. Brussels: European Fiscal Board.
- Thygesen, N., Beetsma, R., Bordignon, M., Duchêne, S., & Szczurek, M. (2018). *Annual Report 2018*. Brussels: European Fiscal Board.

### ***Dissertation – internally prepared***

Ciurilă, N. (2018). Risk sharing properties and labor supply disincentives of pay-as-you-go pension systems.

Furtună, O. (2018). Fiscal austerity and risk sharing in advanced economies.

Jakucionyte, E. (2018). The macroeconomic consequences of carry trade gone wrong and borrower protection.

Kotan, M. (2018). Human freedom and market freedom: A capability analysis of labor market policies and the neoclassical case for free labor markets.

Teulings, R. M. (2018). Untangling gravity.

### ***Dissertation – externally prepared***

Ciminelli, G. (2018). Essays on macroeconomic policies after the crisis.

Hanson, J. (2018). Sovereign bond auctions in the euro area.

### ***Membership***

Aerd Houben (Member), BIS Committee on the Global Financial Systems (External organisation), BIS Committee on the Global Financial Systems, Switzerland, 2018

Aerd Houben (Member), BIS Markets Committee (External organisation), BIS Markets Committee, 2018, Switzerland

Aerd Houben (Chair), OECD Financial Markets Committee (External organisation), OECD Financial Markets Committee, 2018, France

### ***Talk or presentation***

Aerd Houben (Speaker), Central Bank Digital Currency, 15 Sep 2018, Alternative Finance Festival, Utrecht, Netherlands

Aerd Houben (Speaker), Blockchain in Financial Services, 4 Sep 2018, OECD Blockchain Policy Forum

Elisabeth Proehl (Speaker), Existence and Uniqueness of Recursive Equilibria with Aggregate and Idiosyncratic Risk, 6 Oct 2018, Midwest Economic Theory Meeting, Nashville, United States

Elisabeth Proehl (Speaker), Approximating Equilibria with Ex-Post Heterogeneity and Aggregate Risk, 12 Oct 2018, Rotterdam, Netherlands

Aerd Houben (Speaker), The Impact of Financial Structure on Systematic Risk, Nov 2018, Financial Stability Seminar, 1/11/18, Oslo, Norway

Elisabeth Proehl (Speaker), Existence and Uniqueness of Recursive Equilibria with Aggregate and Idiosyncratic Risk, 5 Dec 2018, European Winter Meetings of the Econometric Society, 4/12/18 → 5/12/18, Naples, Italy

Elisabeth Proehl (Speaker), Approximating Equilibria with Idiosyncratic and Aggregate Risk, 17 Dec 2018, Joint European Central Bank/Centre for Economic Policy Research Workshop Household heterogeneity in macroeconomics, 17/12/18 → 18/12/18, Frankfurt, Germany.

### ***Media appearances***

John Loricé, Cover story: refining capacity - Middle East on fast track, 1/07/18



## 10. HUMAN CAPITAL

Programme director: Prof. dr. E. Plug  
 Section: Microeconomics  
 JEL-classification: I, J, L  
 Starting date: 2001  
 Website: [www.ase.uva.nl/hum](http://www.ase.uva.nl/hum)

### 10.1 Members of the research group and research in FTEs

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
Albrecht, S.	msc	phd	0,80	0,63	-	1
Azevedo, L. de	msc	phd	-	-	0,13	1
Booij, A.S.	dr	ud	0,18	0,43	0,50	1
Geijtenbeek, L.	msc	phd	0,40	0,04	0,00	1
Hartog, J.	prof. dr.	guest	0,00	0,00	0,00	1
Meulen, S. ter	msc	phd	-	0,27	0,80	1
Oosterbeek, H.	prof. dr.	hgl	0,50	0,50	0,50	1
Peter, N.	msc	guest	0,00	-	-	1
Plug, E.J.S.	dr.	hgl	0,50	0,50	0,50	1
Praag, B.M.S. van	prof. dr.	guest	0,00	0,00	0,00	1
Rossi, P.	dr.	ud	0,17	0,50	0,50	1
Ziegler, L.	msc	phd	0,27	-	-	1
Ziegler, L.	msc	guest	0,00	0,00	-	1
<b>Subprogramme TIER</b>				-		
Groot, W.	prof. dr.	hgl	0,20	0,20	-	2
Hogendoorn, B.	dr.	oz	0,33	0,67	-	2
Maassen van den Brink, H.	prof. dr.	hgl	0,53	0,69	1,00	2
Nessler, C.	dr.	oz	0,25	1,00	0,75	2
Tomini, F.	dr.	oz	1,00	0,50	-	2
Vooren, M. van	dr.	oz	0,17	0,80	0,80	2
<b>Subprogramme AIID</b>				-		
Pradhan, M.P.	prof. dr.	hgl	0,15	0,15	0,15	1
Pradhan, M.P.	prof. dr.	hgl	0,20	0,20	0,20	3
Total 1st flow of funds			2,97	3,02	3,08	
Total 2nd flow of funds			2,48	3,86	2,55	
Total 3rd flow of funds			0,20	0,20	0,20	
Total 1st f.o.f. excl. PhD's			1,50	2,08	2,15	
Total all flows of funds			5,65	7,08	5,83	
PhD students			1,47	0,94	0,93	

## 10.2 Programme Design

### Objective

The program is an empirically driven research program which relies on micro-econometric techniques to study important microeconomic issues in the areas of labour economics, economics of education, family economics, and development economics. Particular emphasis is paid to the identification of causal mechanisms, the analysis of existing policies and policy changes on a variety of microeconomic outcomes, and the design and implementation of experiments to carefully test predictions of microeconomic/behavioural theories and regularities evaluate policy interventions and their microeconomic consequences.

### Motivation

Microeconomic models play an important role in understanding individual behavior in many economic areas; that is, predictions taken from microeconomic theories are often used to explain and understand individual economic circumstances, how differences between individuals can possibly account for differences in economic outcomes, and to what extent policies can influence individual economic circumstances. But predictions are not easily verified and possibly false, with huge consequences for (the development of) microeconomic theory, policy and policy design. It is therefore crucial to test predictions of individual economic behaviour with careful empirical work, using the most rigorous methods in applied micro-econometrics.

### Themes

The human capital group is originally a labour orientated economics program which investigates various aspects of labour economics. Over the years, however, the human capital group has extended its range of topics in applied microeconomics, covering the fields of labour economics, economics of education, family economics, and development economics.

### Organization

The human capital group is part of the larger microeconomics section. Its members are further affiliated with three research groups: ACAM, TIER, and AIGHD.

ACAM (Amsterdam Center of Applied Microeconometrics) is a joint venture of the University of Amsterdam and the VU University Amsterdam. ACAM is founded in 2015 and hosts researchers who are specialized in empirical research in labor economics, health economics, family economics, the economics of education and development economics. These researchers all combine academic rigor with policy relevance. Publications of ACAM researchers find their way into the top economics journals (AER, JPE, QJE, REStud). The strong collaboration between UvA and VU members shows through a joint seminar series, joint PhD supervision, and work-in-progress meetings. ACAM researchers include Erik Plug, Hessel Oosterbeek, Adam Booij, Pauline Rossi, and Thomas Buser, Simon ter Meulen, and Luisa de Azevedo.

TIER (Top Institute for Evidence Based Education Research) is founded in 2008. It aims to contribute to the improvement of the quality of education in the Netherlands by promoting the evidence-based approach as a guiding principle in education policy and practice. TIER is funded externally. Henriette Maassen van den Brink is the director of TIER Amsterdam and largely responsible for attracting large external grants. Other TIER staff members include Wim Groot, Melvin van Vooren.

AIGHD (Amsterdam Institute for Global Health & Development) is also a joint initiative of the University of Amsterdam and the VU University Amsterdam. AIGHD is a multidisciplinary research network with a strong focus on generating evidence to improve the design of policies to reduce poverty. AIGHD members are Menno Pradhan and Emily Berkhout.

### 10.3 Programme Evaluation

The human capital group is a small-scale research programme. In 2018, the human capital group changed little in composition. Luisa de Azevedo joined us as a first year PhD student (supervisors Hessel Oosterbeek and Bas van der Klaauw).

The year 2018 has been again an excellent year in terms of scientific output. Academic highlights include the two top 5 publications of Menno Pradhan in the Quarterly Journal of Economics and Pauline Rossi with an article accepted in the Review of Economic Studies. Despite its small size, the scientific output of the human capital group is outstanding.

The human capital group provides a stimulating research environment. This environment is partially shaped through national and international connections, external seminar series, internal work-in-progress meetings, and international visitors. Human capital members have close research contacts with researchers at ASE, VU University Amsterdam and Tinbergen Institute, work together with researchers from Europe and US, and are regularly invited to give seminars and (keynote) speeches throughout the world. Members of the human capital group organize a successful weekly seminar series at Tinbergen Institute. The seminar series is internationally renowned. Members of the human capital group (including senior researchers, PhD students and visitors) also come together weekly to discuss their work in various stages.

The work of human capital members also addresses practical policy issues with societal relevance. In addition, most research is empirically orientated and can be formulated such that it is relatively easy to comprehend for policy makers. Members of the human capital group are in close contact with the Ministry of Education, Culture and Science and regularly come together to communicate their scientific work with insights and recommendations. Members are also frequently invited to consult on a variety of governmental policy issues. Henriette Maassen van den Brink is member of the Amsterdam Economic Board which strives to stimulate and support sustainable collaboration, innovation and growth in the Amsterdam region, and strengthen international competitiveness. Henriette Maassen van den Brink has also been appointed chair of the Education Council (Onderwijsraad) which is an independent governmental advisory board that advises the ministers, parliament and local authorities. Hessel Oosterbeek is advising the municipalities of Amsterdam and Utrecht on how to re-organize school assignment procedures. Erik Plug is the president of the European Association of Labour Economists, which is an association of about 800 scientists working in field of labour economics (or related to labour economics).

The human capital group attracts and delivers many good PhD students. This year, three PhD students successfully defended their PhD thesis. Lenny Ziegler (supervisor Erik Plug and Bas van der Klaauw) works as Assistant Professor at University of Vienna. Sabine Albrecht (supervisor Hessel Oosterbeek and Erik Plug) works as PostDoc at Queensland University of Technology Brisbane. Ferry Haan (supervisor Adam Booij and Erik Plug) works as a secondary school economics teacher near Amsterdam.

In sum, the human capital group experienced an outstanding year in terms of academic output. While small, the group's interests and scientific methods are internally coherent and clear; that is, the human capital research programme covers mainstream topics in applied microeconomics (including the economics of education, family and demographic economics, health economics, labor economics and development economics) with a strong focus on microeconometrics.

This evaluation is reflected in the following SWOT analysis. Here we list our main Strengths, and summarize how we have dealt with our (previous) Weaknesses and Threats:

**Strengths:** one of the strongest research groups of the department; high quality research addressing issues of societal relevance; stimulating research environment; good reputation; good placement record of former PhD students; internal coherent and visible research theme; successful history in attracting external funds (TIER).

**Weaknesses:** relatively small; we are working on this – we have been successful on the 2018/2019 jobmarket and were able to attract Giuseppe Sorrenti for 2019/2020.

**Opportunities:** we have successfully sought closer collaboration with labour economics group at Free University Amsterdam (ACAM); with Pauline Rossi and Menno Pradhan we may further seriously develop the track Development Economics.

**Threats:** economics as a science has evolved in a more empirically orientated field of science; this is why most (serious) economic departments offer a more empirically orientated curriculum to economics students and have sizable groups of empirically orientated microeconomists. The increasing empirical importance has not been reflected in our economics curriculum; we are working on this – in the current bachelor curriculum we are now responsible for two new courses teaching elementary statistics, the key concepts of applied econometrics, using real-world examples.

## 10.4 Resources and Funding

TIER-research is currently funded by the local municipality of Amsterdam. Over a period of 5 years (2015-2020) TIER will receive €5.3 million. Two PhD students (Elisabeth Artmann and Simon ter Meulen) are co-financed with Free University Amsterdam (VU). Pauline Rossi has received a NWO VENI grant. Several visiting researchers participate in the program, without financial compensation. Menno Pradhan is a principal investigator funded by AIGHD.

## 10.5 Output

### Key (top 5) publications

Booij, A, Leuven, E. & Oosterbeek, H. (2017). Ability peer effects in university: Evidence from a randomized experiment. *Review of Economic Studies*, 84, 547-587.

Bjorklund, A., Lindahl, M. & Plug, E. (2006). The origins of intergenerational associations: Lessons from Swedish adoption data. *Quarterly Journal of Economics*, 121, 999-1028.

Buser, T., Niederle, M. & Oosterbeek, H. (2014). Gender, competitiveness and career choices. *Quarterly Journal of Economics*, 129, 1409-1447.

Fredriksson, P., Ockert, B. & Oosterbeek, H. (2013). Long-term effects of class size. *Quarterly Journal of Economics* 128. 249-285.

Lundborg, P., Plug, E. & Wurz Rasmussen, A. (2017). Can women have children and a career: IV evidence from IVF treatments. *American Economic Review*, 107, 1611-1637.

Plug, E., & Vijverberg, W. (2003). Schooling, family background, and adoption: Is it nature or is it nurture. *Journal of Political Economy*, 111, 611-641.

Plug, E. (2004). Estimating the effect of mother's schooling on children's schooling using a sample of adoptees. *American Economic Review*, 94, 358-358.

Ree, J. de, Muralidharan, K., Pradhan, M., & Rogers, H. (2018). Double for Nothing? Experimental Evidence on an Unconditional Teacher Salary Increase in Indonesia. *Quarterly Journal of Economics*, 133(2), 993-1039.

Rossi, P. (2019). Strategic choices in polygamous household: Theory and evidence. *Review of Economic Studies*, 84, 547-587.

### Forthcoming

Oosterbeek, H. & Ruijs, N. School choice in Amsterdam: Which schools are chosen when school choice is free? *Education Finance and Policy*.

Rossi, P. (2019). Strategic choices in polygamous household: Theory and evidence. *Review of Economic Studies*, 84, 547-587.

### ***Publications in numbers***

<b>Output type</b>	<b>Classification</b>	<b>#</b>
Articles in journals	Refereed	7
	Non-refereed	0
	Professional	0
	Popular	0
Books or book chapters	Refereed	0
	Non-refereed	0
	Professional	0
	Popular	0
Conference proceedings		0
PhD theses		4
<b>Total</b>		<b>11</b>

### ***Article in journal – refereed.***

Berry, J., Karlan, D., & Pradhan, M. (2018). The Impact of Financial Education for Youth in Ghana. *World Development*, 102, 71-89. <https://doi.org/10.1016/j.worlddev.2017.09.011>

Buser, T., Geijtenbeek, L., & Plug, E. (2018). Sexual orientation, competitiveness and income. *Journal of Economic Behavior & Organization*, 151, 191-198. <https://doi.org/10.1016/j.jebo.2018.03.017>

Duku, S. K. O., Nketiah-Amponsah, E., Janssens, W., & Pradhan, M. (2018). Perceptions of healthcare quality in Ghana: Does health insurance status matter? *PLoS ONE*, 13(1), [e0190911]. <https://doi.org/10.1371/journal.pone.0190911>

Geijtenbeek, L., & Plug, E. (2018). Is there a penalty for registered women? Is there a premium for registered men? Evidence from a sample of transsexual workers. *European Economic Review*, 109, 334-347. <https://doi.org/10.1016/j.eurocorev.2017.12.006>

Plug, E., van der Klaauw, B., & Ziegler, L. (2018). Do Parental Networks Pay Off? Linking Children's Labor-Market Outcomes to Their Parents' Friends. *Scandinavian Journal of Economics*, 120(1), 268-295. <https://doi.org/10.1111/sjoe.12227>

Ree, J. de, Muralidharan, K., Pradhan, M., & Rogers, H. (2018). Double for Nothing? Experimental Evidence on an Unconditional Teacher Salary Increase in Indonesia. *The Quarterly Journal of Economics*, 133(2), 993-1039. <https://doi.org/10.1093/qje/qjx040>

Veldhuizen, R. van, Oosterbeek, H., & Sonnemans, J. (2018). Peers at work: Evidence from the lab. *PLoS ONE*, 13(2), [e0192038]. <https://doi.org/10.1371/journal.pone.0192038>

### ***Dissertation - internally prepared***

Albrecht, S. (2018). Empirical studies in labour and migration economics.

### ***Dissertation - externally prepared***

Haan, F. H. G. (2018). In pursuit of excellence: Four (natural) experiments in the economics of education.

Jong, C. H. de (2018). Privatisation in practice: A study from an insurance perspective into the effects of privatisation of public sickness- and disability programs in The Netherlands, Germany and Canada.

Ziegler, L. (2018). Social networks, marital sorting and job matching: Three essays in labor economics.

*Talk or presentation*

Pauline Rossi (Speaker), Development Economics Workshop, Wageningen University, Wageningen

Pauline Rossi (Speaker), EALE, Université de Lyon, Lyon, France

Pauline Rossi (Speaker), ESPE, Universiteit Antwerpen, Antwerpen

Pauline Rossi (Speaker), Labor Economics Workshop, Uppsala University, Uppsala, Sweden

Pauline Rossi (Speaker), Matuszewski seminar, Université Laval

Pauline Rossi (Speaker), NEUDC, Cornell University, Ithaca, United States

Pauline Rossi (Speaker), "The rich have money, the poor have children": exploring the fundamental causes of population growth in Africa, 11 Jun 2018, UvA Spui25

Pauline Rossi (Speaker), Private health investments under competing risks, 18 Dec 2018, Wageningen University

## 11. EXPERIMENTAL & POLITICAL ECONOMICS (CREED)

### 11.1 Members of the research group and research in FTEs

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
<b>Akdeniz, A.</b>	msc	phd	-	0,27	0,80	1
<b>Brütt, K.</b>	msc	phd	-	-	0,27	2
<b>Dreu, C. de</b>	prof. dr.	hgl	0,20	0,20	0,20	1
<b>Engelmann, J.</b>	dr.	uhd	0,80	0,80	0,80	1
<b>Gneezy, U.</b>	prof. dr.	hgl	0,20	0,19	0,20	1
Gomez Martinez, F.	msc	phd	0,53	-	-	1
He, S.	msc	phd	0,53	-	-	1
Hu, A.	dr.	oz	0,56	0,19	-	2
<b>Ioannidis, K</b>	msc	phd	-	0,13	0,80	1
<b>Jagau, S.</b>	msc	phd	0,80	0,80	0,53	1
<b>Kobis, N.</b>	dr.	postdoc	0,27	0,80	0,80	2
<b>Lebreton, M.</b>	dr.	oz	1,00	1,00	0,58	2
<b>Lebreton, M.</b>	dr.	guest	-	-	0,00	1
<b>Leib, M.</b>	msc	phd	0,80	0,80	0,00	2
<b>Mermer, G.</b>	dr.	postdoc	-	-	0,40	2
<b>Nelidov, V.</b>	msc	phd	0,27	0,80	0,80	1
<b>Offerman, T.J.S.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Onderstal, A.M.</b>	dr.	ud	0,20	0,20	0,13	1
<b>Pace, D.</b>	msc	phd	-	-	0,27	2
<b>Rilovic, A.</b>	msc	phd	0,80	0,53	0,07	1
Rilovic, A.	msc	guest	-	-	0,00	1
<b>Ringdal, C.</b>	dr.	postdoc	-	-	0,27	2
<b>Romagnoli, G.</b>	dr.	ud	0,17	0,50	0,50	1
<b>Schram, A.J.H.C.</b>	prof. dr.	hgl	0,20	0,20	0,20	1
<b>Shalvi, S.</b>	dr.	uhd	0,80	0,80	0,80	2
Smerdon, D.	msc	phd	0,80	-	-	1
<b>Sonnemans, J.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Sorraperra, I.</b>	dr.	postdoc	0,27	0,80	0,80	2
<b>Ting, C.</b>	msc	phd	0,27	0,80	0,80	1
<b>Ule, A.</b>	dr.	ud	0,00	0,03	0,11	1
<b>Veelen, C.M. van</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Weele, J. van der</b>	dr.	ud	0,50	0,50	0,80	2
Winden, F.A.A.M. van	prof. dr.	hgl	0,03	-	-	1
<b>Winden, F.A.A.M. van</b>	prof. dr.	guest	0,00	0,00	0,00	1
<b>Woerner, A.</b>	msc	phd	0,80	0,80	0,53	1
Zheng, J.	msc	phd	0,53	-	-	1
Total 1st flow of funds			9,93	8,25	7,97	
Total 2nd flow of funds			2,90	4,39	4,99	
Total 3rd flow of funds			0,00	0,00	0,00	
Total 1st f.o.f. excl. PhD			4,60	4,60	3,64	
Total 1st-3rd flow of funds			12,83	12,83	12,96	
PhD students			6,13	4,93	4,87	

## 11.2 Programme design

### Objective

Improving the understanding of the behavioural determinants and consequences of economic decision making by (a) focusing on political economic issues, (b) allowing for bounded rationality, and (c) using laboratory experimentation as research method.

### Motivation

Political decision making plays an important role in economies. Governments, for example, are essential for the functioning of markets, may be called upon to correct for market failures, but also have their own dynamics. Positive welfare effects of policies cannot be taken for granted. It is, therefore, important to study political decision making and the way in which policies can be applied beneficially. These observations provide the motivation for the first project: “Economics of political decision making”, a long standing project at the FEB dating back to 1983. It is related to public choice and the more recent upsurge in political economics.

Economic models, also when concerned with political decision making, typically make strong assumptions about the rationality, sophistication, and selfishness of individual behaviour. Experimental and other empirical evidence suggests, however, that the predictive power of the standard ‘homo economicus’ model is often disappointing and depends on the institutional character of the decision making environment. There is a need for greater knowledge and a more satisfactory treatment of the bounds on rationality generated by the nature of cognition and emotion, and the influence of institutions. This motivates the second project: “Bounded rationality and institutions”, which fits into the emerging field of behavioural economics.

For the advancement of theory, empirical feedback is crucial. This may hold in particular for new research areas, when sorting out the most promising ways to go. Empirical analysis is seen as an important ingredient of this programme. For many of the issues studied in the aforementioned two projects, however, adequate field data are hard to come by or even nonexistent. Laboratory experimentation is a helpful complementary research method, especially in these cases, for exploration or the testing of models focusing on fundamental behavioural aspects or mechanisms. This motivates the third project: “Experimental economics”, which is stimulated by, and provides feedback for, the other two projects.

### Institutional embedding

The research of this programme is carried out within the Center for Research in Experimental Economics and political Decision-making (CREED), a research institute of the FEB. CREED was established in 1991 by a PIONIER-grant from the Netherlands Organisation for the Advancement of Scientific Research (NWO) for the development of experimental economics in the Netherlands. An important facility is the CREED-laboratory for experimental economics, one of the few dedicated computer laboratories in Europe. Its focus on political decision making and experimental economics distinguishes CREED internationally.

### Projects

#### *I Economics of political decision making*

This project is concerned with the demand for and the endogenous supply of government policies, the ways in which coordination takes place through the political decision-making process, and the effects thereof on the economy. Major research topics are:

- Political participation and influence (voting, activity and influence of interest groups);
- Interaction between the public sector and the private sector (e.g. the development of social capital and its importance for the provision of public goods);
- Political economy of public and private institutions (e.g. issues of fiscal federalism).

#### *II Bounded rationality and institutions*

In this project fundamental aspects of individual decision making, with economic relevance, are investigated. More particularly, attention is focused on the impact of cognitive limitations and emotions. In addition, responses to the complexity and institutional characteristics of the decision environment are studied. Among the topics investigated are:



- Group formation in complex environments (e.g. development of political preferences through social interaction, development of interest groups);
- Economic significance and modelling of emotions (e.g. anger, anxiety, happiness);
- Performance of various auction formats;
- Irrationalities in risk attitudes, and efficiency gains by avoiding or reckoning with these.

### *III Experimental economics*

The main purpose of laboratory experiments in economic research is to create a (political) economic process in a laboratory environment which allows for sufficient control and accurate measurement. Experiments are used for three purposes: (a) the testing of behavioural assumptions and predictions of existing (competing) theories; (b) the searching for facts that are instrumental in the construction of descriptive and explanatory theories; and (c) the evaluation of (new) institutions to assist policy makers. Research in this project is particularly stimulated by, and provides feedback for, the aforementioned two projects. Major lines of research are:

- Voting and electoral competition (behaviour of voters and political candidates/parties);
- Lobbying and political pressure (ways and means, and determinants of effectiveness);
- Emotions and economic behaviour (impact, and modelling);
- Markets and institutions (functioning of markets and, the design of, institutions);
- Evolution of cooperation (development of cooperative behaviour over time);
- Biases in risk attitudes.

## **11.3 Programme evaluation**

In 2018 we welcomed 3 new PhD students and two post-docs. Andreas Ziegler will be supervised by Theo Offerman and Giorgia Romagnoli; Katharina Brütt will be supervised by Arthur Schram and Joep Sonnemans, and Davide Pace will be supervised by Joël van der Weele and Joep Sonnemans.

Ayşe Gül Mermer started as a post-doc on the SUSfood project of Sander Onderstal and Joep Sonnemans. Charlotte Ringdal started as a postdoc on a project of Shaul Salvi.

Four PhD students defended their PhD theses in 2018: Jin-Di Zheng in February, Ben Loerakker and Max Hoyer in March, and Stephan Jagau in October. Jin-Di is now assistant professor at the Nanjing Audit University; Ben and Max left academia and Stephan is at the University of California, Irvine.

External recognition of the research undertaken at CREED was received in the form of some important grants, awards and prizes:

- Joël van der Weele has received a VIDI grant (800.000 euro) from the NWO for the project "Selective Attention and Economic Decisions"
- Katharina Brütt received an NWO Talent grant (a 4-year PhD position)
- Matthijs van Veelen received an interdisciplinary UvA grant for a PhD student (together with Martijn Egas (IBED, biology) and Annemie Ploeger (Psychology). The work will be on "The attractiveness of altruism: Partner choice and the evolution of cooperation"
- Shaul received a KNAW Sara van Dam grant to fund a two-year project (9/18-9/20) seeking to figure out: "does empathy lead to honesty?"
- Stephan Jagau received a Rubicon grant from the NWO (130.000 euro)
- Stephan also received a SABE/IAREP/Elsevier Best Student Paper Award (500 euro)
- Matthias Weber and Arthur Schram have been awarded the 10.000 euro Jurgutis Award by the Bank of Lithuania for their paper "The non-equivalence of the labor market taxes: a real-effort experiment", published in the Economic Journal in 2017
- Junze Sun has won the 1000 euro Gregory Chow Best Paper Award at the 2018 CES conference in Hefei, China for his paper "A Theory on Media Bias and Elections"
- Carsten de Dreu received an ERC Advanced Grant and a few month later he was awarded the Spinoza Prize (2.5 million euro).

A series of top-level publications (18 published plus 3 accepted for publication) include articles in Management Science, Journal of Finance, Economic Journal, Psychological Science, and Journal of the European Economic Association.

External recognition of the research undertaken at CREED was received in various other ways as well. These include numerous invitations to present seminars or keynote lectures and various associate editorships.

Research contacts were continued, i.a., by a successful Tinbergen seminar series that included presentations by renowned scholars such as Kristof Madarasz, Stefan Trautmann, Peter Schwardmann, Jean-Francois Bonnefon, Alexander Coutts, Alex Imas, Michael Kosfeld, David Dillenberger, Zachary Grossman, Yan Chen, Aldo Rustichini, Johanna Möllerstrom, Florian Zimmerman, John Hamman, Friederike Mengel, and Daniel Schunk.

In November 2018 a workshop on Communication was organized by Theo Offerman, Uri Gneezy, Jeroen van de Ven. The line-up of speakers included Ayala Arad, Carsten de Dreu, Christina Rott, Marta Serra-Garcia, Martin Sefton, Puja Bhattacharya, Tim Cason and Uri Gneezy.

A new initiative is started in cooperation with the group of Matthias Sutter at the Max-Planck Institute in Bonn. The plan is to have bi-annual meetings with 4 presentations by CREEDers and 4 presentations by researchers from the Max Planck Institute. The first meeting was in Bonn in November 2018. CREED's participation in the Cognitive Science Center Amsterdam (CSCA) continued, as did our yearly PhD exchanges with the Universities of Nottingham and East Anglia. These exchanges provide excellent opportunities for CREED PhD students to present their work (at all stages of the project) to an audience consisting of PhD students and world-renowned professors of the participating institutes. In June 2018 we held a 2-day meeting in Drenthe with all CREEDers to discuss long-term visions of our fields and discuss possible developments for the next 10-20 years. Finally, Jeroen van de Ven and Arthur Schram organized a summer school on Experimental Economics.

## **11.4 Resources and Funding**

The program again received modest funding from the research institute ASE-RI, which was largely spent to cover (part of the) traveling costs to attend conferences. Additional means were obtained from external funding and the Tinbergen Institute (for PhD-students). Substantial additional means came from the UvA-Research Priority Area Behavioral Economics. This provides a solid foundation for paying participants in experiments at the CREED laboratory.

## 11.5 Research output

### ***Key publications***

De Dreu, Carsten K.W. , H. Steven Scholte, Frans A.A.M. van Winden, and K. Richard Ridderinkhof (2015) Oxytocin Tempers Calculated Greed but not Impulsive Defense in Predator-Prey Contests Social Cognitive and Affective Neuroscience 10, 721-728

Gneezy, U., Imas, A., & Madarász, K. (2014). Conscience accounting: Emotion dynamics and social behavior. *Management Science*, 60(11), 2645-2658.

Grossman, Zachary and Joël J. van der Weele (2017) Self-image and willful ignorance in social decisions. *Journal of the European Economic Association* 15,173-217

van Leeuwen, Boris, Charles Noussair, Theo Offerman, Sigrid Suetens, Matthijs van Veelen and Jeroen van de Ven (2018) Predictably Angry: Facial cues provide a credible signal of destructive behavior. *Management Science* 64, 2973-3468

van Veelen, Matthijs (2018) Can Hamilton's rule be violated? *eLife* 7, e41901

Weber, Matthias, John Duffy, and Arthur Schram (2018) An Experimental Study of Bond Market Pricing. *Journal of Finance* 73, 1857-1892

Gross, Jorg, Margarita Leib, Theo Offerman and Shaul Shalvi (2018) Ethical Free Riding: When Honest People Find Dishonest Partners. *Psychological Science* 29: 1956-1968

### ***E-pub ahead of print***

Bereby-Meyer, Y., Hayakawa , S., Shalvi, S., Corey , J., Costa, A., & Keysar, B. (2018). Honesty Speaks a Second Language. *Topics in Cognitive Science*. <https://doi.org/10.1111/tops.12360>

Celse, J., Max, S., Steinel, W., Soraperra, I., & Shalvi, S. (2018). Uncertain lies: How payoff uncertainty affects dishonesty. *Journal of Economic Psychology*. <https://doi.org/10.1016/j.joep.2018.09.003>

Gross, J., Leib, M., Offerman, T., & Shalvi, S. (2018). Ethical Free Riding: When Honest People Find Dishonest Partners. *Psychological Science*, 29(12), 1956-1968. <https://doi.org/10.1177/0956797618796480>

Ikink, I., Engelmann, J. B., van den Bos, W., Roelofs, K., & Figner, B. (2019). Time ambiguity during intertemporal decision-making is aversive, impacting choice and neural value coding. *NeuroImage*, 185, 236-244. <https://doi.org/10.1016/j.neuroimage.2018.10.008>

Soraperra, I., Weisel, O., & Ploner, M. (2018). Is the victim Max (Planck) or Moritz? How victim type and social value orientation affect dishonest behavior. *Journal of Behavioral Decision Making*. <https://doi.org/10.1002/bdm.2104>

Vainapel, S., Weisel, O., Zultan, R., & Shalvi, S. (2018). Group moral discount: Diffusing blame when judging group. *Journal of Behavioral Decision Making*. <https://doi.org/10.1002/bdm.2106>

### *Publications in numbers*

<b>Output type</b>	<b>Classification</b>	<b>#</b>
Articles in journals	Refereed	18
	Non-refereed	0
	Professional	1
	Popular	0
Books or book chapters	Refereed	1
	Non-refereed	1
	Professional	0
	Popular	0
Conference proceedings		0
PhD theses		4
<b>Total</b>		<b>25</b>

#### *Article in journal – refereed*

- Brebner, S., & Sonnemans, J. (2018). Does the elicitation method impact the WTA/WTP disparity? *Journal of Behavioral and Experimental Economics*, 73, 40-45. <https://doi.org/10.1016/j.socec.2018.01.006>
- Buser, T., Gerhards, L., & van der Weele, J. (2018). Responsiveness to feedback as a personal trait. *Journal of Risk and Uncertainty*, 56(2), 165-192. <https://doi.org/10.1007/s11166-018-9277-3>
- García, J., & van Veelen, M. (2018). No strategy can win in the repeated prisoner's dilemma: Linking game theory and computer simulations. *Frontiers in Robotics and AI*, 5, [102]. <https://doi.org/10.3389/frobt.2018.00102>
- Gross, J., Leib, M., Offerman, T., & Shalvi, S. (2018). Ethical Free Riding: When Honest People Find Dishonest Partners. *Psychological Science*, 29(12), 1956-1968. <https://doi.org/10.1177/0956797618796480>
- Hein, G., Engelmann, J. B., & Tobler, P. N. (2018). Pain relief provided by an outgroup member enhances analgesia. *Proceedings of the Royal Society B-Biological Sciences*, 285(1887), [20180501]. <https://doi.org/10.1098/rspb.2018.0501>
- Hu, A., Offerman, T., & Zou, L. (2018). How risk sharing may enhance efficiency of English auctions. *Economic Journal*, 128(610), 1235-1256. <https://doi.org/10.1111/eoj.12439>
- Jagau, S., & Offerman, T. (2018). Defaults, normative anchors, and the occurrence of risky and cautious shifts. *Journal of Risk and Uncertainty*, 56(3), 211-236. <https://doi.org/10.1007/s11166-018-9282-6>
- Kopányi-Peucker, A. G., Offerman, T., & Sloof, R. (2018). Team production benefits from a permanent fear of exclusion. *European Economic Review*, 103, 125-149. <https://doi.org/10.1016/j.eurocorev.2018.01.005>
- Laakasuo, M., Köbis, N., Palomäki, J., & Jokela, M. (2018). Money for microbes—Pathogen avoidance and out-group helping behaviour. *International Journal of Psychology*, 53(S1), 1-10. <https://doi.org/10.1002/ijop.12416>
- Sadiraj, K., & Schram, A. (2018). Inside Information in Ponzi Games. *Journal of the Economic Science Association*, 4(1), 29-45. <https://doi.org/10.1007/s40881-018-0047-4>
- Sonnemans, J., van Dijk, F., Donders, B., & Bauw, E. (2018). An economic approach on countering the misuse of the right to challenge judges: an experiment. *European Journal of Law and Economics*, 45(1), 29-57. <https://doi.org/10.1007/s10657-016-9539-y>
- van Leeuwen, B., Noussair, C. N., Offerman, T., Suetens, S., van Veelen, M., & Van de Ven, J. (2018). Predictably angry-facial cues provide a credible signal of destructive behavior. *Management Science*, 64(7), 3352-3364. <https://doi.org/10.1287/mnsc.2017.2727>
- van Veelen, M. (2018). Can Hamilton's rule be violated? *eLife*, 7, [e41901]. <https://doi.org/10.7554/eLife.41901.001>

van Veelen, M. (2018). Fisher's fundamental theorem of natural selection, dynamic sufficiency, and the necessity of higher moments. *Journal of Theoretical Biology*, 437, 299-304. <https://doi.org/10.1016/j.jtbi.2017.10.006>

van Veldhuizen, R., & Sonnemans, J. H. (2018). Nonrenewable Resources, Strategic Behavior and the Hotelling Rule: An Experiment. *The Journal of Industrial Economics*, 66(2), 481-516. <https://doi.org/10.1111/joie.12173>

van Veldhuizen, R., Oosterbeek, H., & Sonnemans, J. (2018). Peers at work: Evidence from the lab. *PLoS ONE*, 13(2), [e0192038]. <https://doi.org/10.1371/journal.pone.0192038>

Verschuere, B., Köbis, N. C., Bereby-Meyer, Y., Rand, D., & Shalvi, S. (2018). Taxing the Brain to Uncover Lying? Meta-analyzing the Effect of Imposing Cognitive Load on the Reaction-Time Costs of Lying. *Journal of Applied Research in Memory and Cognition*, 7(3), 462-469. <https://doi.org/10.1016/j.jarmac.2018.04.005>

Weber, M., Duffy, J., & Schram, A. (2018). An Experimental Study of Bond Market Pricing. *The Journal of Finance*, 73(4), 1857-1892. <https://doi.org/10.1111/jofi.12695>

#### **Article in journal – professional**

Jackson, D., & Köbis, N. (2018). Anti-corruption through a social norms lens. *U4 Issue*, 2018(7).

#### **Book chapter - refereed**

Engelmann, J. B., & Hare, T. A. (2018). Emotions can bias decision-making processes by promoting specific behavioral tendencies. In A. S. Fox, R. C. Lapate, A. J. Shackman, & R. J. Davidson (Eds.), *The Nature of Emotion: Fundamental Questions* (2 ed., pp. 355-358). (Series in Affective Science). New York, NY: Oxford University Press.

#### **Book chapter – non-refereed**

Köbis, N. C., & Huss, O. (2018). Ein Atlas zur Unterscheidung von Korruptionsformen. In S. Wolf, & P. Graeff (Eds.), *Korruptionsbekämpfung vermitteln: Didaktische, ethische und inhaltliche Aspekte in Lehre, Unterricht und Weiterbildung* (pp. 153-177). Wiesbaden: Springer VS. [https://doi.org/10.1007/978-3-658-19016-3\\_9](https://doi.org/10.1007/978-3-658-19016-3_9)

#### **Dissertation – internally prepared**

Hoyer, M. O. (2018). Social preferences and emotions in repeated interactions.

Jagau, S. D. (2018). Listen to the Sirens: Understanding psychological mechanisms with theory and experimental tests.

Loerakker, B. A. (2018). On the role of bonding, emotional leadership, and partner choice in games of cooperation and conflict.

Zheng, J. (2018). Social identity and social preferences: An empirical exploration.

#### **Activities**

##### **Talk or presentation**

Aslihan Akdeniz (Speaker), The cancellation effect at the group level, Workshop on Evolutionary Models of Structured Populations, 5/09/18 → 7/09/18

Aslihan Akdeniz (Speaker), The cancellation effect at the group level, Human Behavior and Evolution Society, 4/07/18 → 7/07/18

Aslihan Akdeniz (Speaker), The cancellation effect at the group level, Learning, Evolution and Games, 2/06/18 → 5/06/18

Aslihan Akdeniz (Speaker), The cancellation effect at the group level, 14th European (formerly Spain-Italy-Netherlands) Meeting on Game Theory (SING14), 16/07/18 → 18/07/18

Aslihan Akdeniz (Speaker), The cancellation effect at the group level, 2018 CeDEx-CREED-CBESS Meeting, 17/05/18 → 18/05/18

Arthur Schram (Speaker), Formal and Informal Legislative Bargaining, 29 Jan 2018, European University Institute, Florence.

Ivan Soraperra (Speaker), A market for integrity - An experiment on corruption in the education sector  
3 May 2018 → 5 May 2018, The Fifth International Meeting on Experimental and Behavioral Social Sciences (IMEBESS), 3/05/18 → 5/05/18

Shaul Shalvi (Speaker), Ethical free-riding: When the honest partner with the dishonest, 9 May 2018, Harvard Business School, United States

Konstantinos Ioannidis (Speaker), Optimal perjury penalty - Norwich 2018, 17 May 2018, University of East Anglia, Norwich, United Kingdom

Ivan Soraperra (Speaker), A market for integrity - An experiment on corruption in the education sector  
4 Jun 2018 → 5 Jun 2018, 11th Maastricht Behavioral and Experimental Economics Symposium (M-BEES), 4/06/18 → 5/06/18

Konstantinos Ioannidis (Speaker), Optimal perjury penalty - Samos 2018, 20 Jun 2018, University of the Aegean, Greece

Ivan Soraperra (Speaker), A market for integrity - An experiment on corruption in the education sector,  
28 Jun 2018 → 1 Jul 2018, ESA World Meeting, 28/06/18 → 1/07/18

Arthur Schram (Speaker), Gender effects of competition or status, 28 Jun 2018 → 1 Jul 2018, Economic Science Association

Shaul Shalvi (Speaker), Honesty in the digital age, 21 Sep 2018, Technical University Munich

Ivan Soraperra (Speaker), A market for integrity - An experiment on corruption in the education sector,  
25 Sep 2018 → 28 Sep 2018, Conference on Decision Sciences - Konstanz

Charlotte Ringdal (Speaker), Incomplete information on spousal preferences: Why it matters for gender inequality, 5 Oct 2018, Advances in Field Experiments 2018, Boston, United States

Shaul Shalvi (Speaker), Ethical free-riding: When the honest partner with the dishonest, 22 Oct 2018, Max Planck Institute for Research On Collective Goods, Bonn, Germany

Arthur Schram (Speaker), Mechanisms for Crowdfunding, 29 Oct 2018, New York University Abu Dhabi, Abu Dhabi, UAE

Arthur Schram (Speaker), Status and Gender, 14 Nov 2018, LUISS, Italy

### ***Publication peer-review and editorial work***

Shaul Shalvi (Editor), Journal of Personality and Social Psychology (Journal)

Shaul Shalvi (Editor), Organizational Behavior and Human Decision Processes (Journal)

### ***Membership academies***

Arthur Schram (Member) of Université de Lyon (External organisation), Lyon, France

### **Prize**

Katharina Brütt (Recipient), NWO Talent grant, 2 Jul 2018

Shaul Shalvi (Recipient), Amsterdam Young Academy, Elected member, 2018

Shaul Shalvi (Recipient), KNAW, Sara van Dam grant, 2018

### **Media appearances**

Nils Köbis, BBC World Service - Why do we Collude with Corruption?, 10/12/18

## 12. MARKETS & ORGANIZATIONS

Programme director: Prof. dr. R. Sloof  
 Section: Microeconomics  
 JEL-classification: L  
 Starting date: 2005  
 Website: [www.ase.uva.nl/mo](http://www.ase.uva.nl/mo)

### 12.1 Members of the research group and research in FTEs

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
<b>Baarsma, B.</b>	prof. dr.	hgl	0,00	0,00	0,00	1
Buser, T.	dr.	ud	0,80	0,53	-	2
<b>Buser, T.</b>	dr.	uhd	-	0,17	0,50	1
<b>Dominguez Martinez, S.</b>	dr.	ud	0,17	0,00	0,07	1
Hinloopen, J.	prof. dr.	hgl	-	0,00	-	1
<b>Hinloopen, J.</b>	prof. dr.	guest	0,00	-	0,00	1
<b>Kiss, A.</b>	dr.	ud	0,50	0,50	0,50	1
<b>Klein, T.</b>	msc	phd	0,27	0,80	0,80	1
Koudstaal, M.	msc	phd	0,27	-	-	1
<b>Onderstal, S.</b>	dr.	ud	0,30	0,30	0,20	1
<b>Praag, C.M. van</b>	prof. dr.	hgl	0,00	0,00	0,00	1
<b>Schinkel, M.P.</b>	prof. dr.	hgl	0,25	0,25	0,50	1
<b>Seldeslachts, J.</b>	dr.	ud	0,00	0,00	0,00	1
<b>Sloof, R.</b>	prof. dr.	hgl	0,50	0,50	0,50	1
<b>Sun, J.</b>	msc	phd	0,80	0,80	0,67	1
<b>Treuren, L.</b>	msc	phd	-	0,27	0,80	1
<b>Ven, J. van de</b>	dr.	uhd	0,50	0,50	0,50	1
<b>Yuan, H.</b>	msc	phd	-	-	0,27	1
Total 1st flow of funds			3,56	4,09	5,31	
Total 2nd flow of funds			0,80	0,53	0,00	
Total 3rd flow of funds			0,00	0,00	0,00	
Total 1st f.o.f. excl. PhD			2,22	2,22	2,77	
Total all flows of funds			4,36	4,62	5,31	
PhD students			1,34	1,87	2,54	

## 12.2 Programme design

### Objectives

Broadly defined, the research program on Markets & Organizations aims to improve our understanding of the working of markets and organizations in capturing the economic benefits from collective action and to identify as well as evaluate (policy) interventions that may improve market or organizational performance.

### Motivation

The field of Markets and Organizations is broad. Research within the programme is centered around both Industrial Organization, Competition Policy & Regulation (i.e. “markets”), and Organizational Economics. Moreover, given the historical origin of the organizational economics group, there is a close and well-established link with research on the Economics of Entrepreneurship. Three different, but closely interrelated lines of research can thus be delineated.

The first line of research studies the working of imperfectly competitive markets, in particular how firms compete with each other on these markets and what the effects are of policy interventions aimed at affecting market performance. The natural focus is on oligopolies where firms have some market power. Topics of interest include (but are not restricted to) pricing strategies, (tacit) collusion, locational choice, research and development, inter-firm relationships, competition policy, market design, auctions, two-sided markets, network industries, regulatory design and enforcement tools (including detection, fines, leniency programs and settlement).

Within economics organizations can be viewed as a means of achieving the benefits of collective action in situations where the price system fails. The second strand of research within M&O on Organizational Economics is concerned with studying the effective internal functioning of organizations in capturing these benefits. The key focus is on problems that may arise from coordinating and motivating the members of an organization to create economic value through superior organizational performance and to study potential remedies for these problems.

The third line of research on the Economics of Entrepreneurship focuses on studying (the determinants of) the choices, behavior and performance of entrepreneurs and on whether and how government policy may be effective in fostering entrepreneurship.

### Methods

Within the M&O program there is an emphasis on both sound empirical work and on applied theory. Empirical analyses primarily focus on the detection and measurement of unbiased effects, either through the use of naturally occurring field data (by means of ‘quasi experiments’ and instrumental variables techniques), field experiments or laboratory experiments. Applied theory typically concerns using the tools from microeconomics and applied game theory to evaluate the impact of either government policy or organizational interventions intended to improve efficiency. Often these models are enriched by incorporating insights from behavioural economics, as empirical evidence has mounted that people do not always satisfy the rationality assumptions made in traditional economic models. Research within the M&O group is always done with a keen eye towards societal relevance, ranging from competition policy, practical auction design in procurement, to the effectiveness of entrepreneurship education in stimulating entrepreneurial intentions.

### Projects

A wide variety of topics and questions are studied within the M&O research programme, which by and large can be divided along the three different lines of research outlined above. Each of these can be further subdivided into a number of different research projects.

### ***Industrial Organization, Competition Policy & Regulation***

#### *Competition policy & Regulation*

Current empirical projects on competition policy deal with potential deterrence effects of merger policy tools, based on data from the U.S. Department of Justice and the U.S. Federal Trade Commission. Furthermore, group members have investigated whether firms that collaborate in research joint ventures, use these collaborations to collude in product markets. In another project, a series of experiments is set up to study the relationship between competition, the nature of competition, the size of a loss and firm profits in insurance markets. Also the impact of antitrust policy at large is investigated. This is done by



further refining the methodologies to estimate price cost margins and by applying the methodology to data from e.g. the Indonesian economy. In addition to the nation-wide impact of the introduction of antitrust policy, also the change in the behaviour of targeted firms was investigated by a difference in difference method. Another strand of research focuses on the Dutch mortgage market. An explanation it puts forward for high mortgage rates is state aided price coordination in Dutch mortgage banking; at some point in time three out of the four main competitors received state aid, prohibiting them to undercut rates of firms that do not get state aid. This allowed the single remaining big player to effectively act as a price leader and implicit coordinator of collusive pricing. Finally, a recent line of research focuses on detecting (coordinated) manipulation of benchmark interest rates like Libor and Euribor.

#### *Research and development*

Research cooperation is key for businesses to successfully innovate and prosper, and firms increasingly rely on extensive networks to achieve their goals. It is, however, still poorly understood how these R&D cooperatives are formed, how they evolve, what their impact is on R&D activities, and what should constitute an optimal R&D policy. These questions drive several research lines. For instance, group members are developing a theoretical framework of research network formation. This framework is tested against a database that includes all large research collaborations in the U.S. Other group members assess the welfare implications of sustaining R&D cooperatives. Again, the fundamental trade-off between static and dynamic efficiency is addressed, giving additional insights as to what should constitute an optimal R&D-stimulating policy.

#### *Auctions*

In the past few decades, the study of auctions has become one of the most active research areas in economic sciences. We aim at answering questions such as: How to prevent cartel formation in auctions? What is the effect of limited liability on bidding behaviour? How to design auctions of multiple objects? What are optimal mechanisms in quasi-markets such as welfare-to-work markets and health care markets? What is the effect of license auctions on the performance of markets? For example, groups members have studied experimentally the impact leniency programmes on the collusive properties of different auction types. Others have studied fundraising mechanisms on charitable giving in a door-to-door fundraising field experiment. The starting point here is that people are not purely selfish because if they were they would donate nothing to charity. Finally, recent research attention has been devoted to crowdfunding, where the focus is how to best structure it as to maximize funding. Here a theory driven (mechanism design) approach is combined with experimental testing in the lab.

#### *Economic analysis in competition cases*

Increasingly does economic analysis play a decisive role in competition law enforcement. In competition cases, economic arguments in market definition, for example in two-sided markets, the theory of harm, or an efficiency defense can be decisive in the finding of an infringement and the design of remedies. Since business strategies constantly evolve, the thinking about possible anticompetitive aspects of them is under constant development as well. Topics studies in this research focus range from quantifying the efficiency defense in merger control and the identification of abuse of dominance strategies, to analyzing the effects of State aid remedies and the calculation of cartel damages.

### ***Organizational Economics***

#### *Decision rights and internal organization*

A key feature of organizational architecture is the division of tasks and responsibilities within organizations: who does and decides on what? Employees lower in the organizational chart typically have better knowledge to take operational decisions, but at the same time have objectives that (may) differ from the interests of the firm. Within this project the tradeoffs that arise in delegating decision authority –like a loss of control versus a loss of initiative– are studied. The focus is in particular on behavioural biases that may affect these tradeoffs; especially when it comes to authority and monitoring non-monetary motives have been found to play a prominent role. Another topic concerns whether (procedural) preferences regarding the way in which decisions are taken affects how efficiently these taken decisions are subsequently implemented.

#### *Performance measurement and reward systems*

A second set of projects within the domain of Organizational Economics is concerned with the design of good performance measures and of appropriate reward systems. Performance measures are for instance

evaluated empirically in terms of their noise and their distortions. The research on reward systems focuses predominantly on (among other things) pay-for-performance contracts, career opportunities and promotions, returns to investments in skills acquisition and the interaction between explicit and implicit incentives. Also here a behavioural approach is typically taken, as for instance people often care about how well they fare relative to others.

### ***Economics of Entrepreneurship***

#### *The behavioural traits of entrepreneurs*

This research aims to identify the defining behavioural traits of entrepreneurs and to establish to what extent these differ from managers. The relevant traits studied include, among other things, attitudes towards risk and losses, overconfidence, intuitive and rational thinking, optimism, willingness to compete and willingness to cooperate in a team. Established entrepreneurs and managers participate in online incentivized tasks designed to measure the relevant traits. In a recent study also future entrepreneurs and future managers are compared in terms of (among others) their temporal preferences.

## **12.3 Programme evaluation**

### **Turnover**

In September 2018 Huaiping Yuan joined the research programme as a PhD student under the supervision of Erik Plug and co-supervision.

In September 2018, Sander Onderstal moved from the Amsterdam School of Economics to the Amsterdam Business School, to take up a full professorship in Strategy & Markets at the ABS section International Strategy & Marketing. Also in September 2018, Huaiping Yuan joined the research group as a PhD student under the supervision of Thomas Buser and Erik Plug. (Former) PhD students Lukas Tóth and Junze Sun are expected to defend their theses in 2019. In the spring of 2018, Mirjam van Praag became president of the Free University in Amsterdam (VU).

**Strengths:** The group has a very broad orientation, both in terms of the choice of research topics as in terms of methodologies used (theoretical/[lab/field]experimental/empirical). The group is well-embedded in ASE and in the Tinbergen Institute; group members thus have co-authored papers with many members from other ASE research groups. The research performed by the group is not only of high quality (with key publications appearing in very good journals), but also very visible and of great practical importance (e.g. the work of Schinkel on the Dutch mortgage market and the manipulation of labor). Some of the group members have close links with governmental bodies such as ministries and antitrust agencies.

**Weaknesses:** There is too little coherence in the broad research program. The group is not very prominent in the arena of theoretical industrial organization and contract theory, except for the field of auction theory. The group has not been very successful in attracting external research grants. Compared to the other two research programs within the microeconomics section, the program has a less well defined and characteristic overarching profile (perhaps partly due to the Organizations branch formerly being part of the Human Capital program as well as the close connections with CREED).

**Opportunities:** The master tracks most closely connected to the group's research program are stable to growing in size and a new track on Competition Policy has been added in recent years. The research program thus has a logical counterpart in teaching and thereby also a sound basis to grow.

**Threats:** The group has a small-scale, with quite some turnover in the last years. With the transfer of Sander Onderstal to the Amsterdam Business School the program becomes even smaller and the link between the constituting Markets and Organizations parts becomes weaker.

### **Societal relevance**

Research by the group on the deterrence effects of merger policy tools and the effectiveness of leniency programs is directly relevant to competition agencies and governmental bodies such as the ACM. Besides, the group's empirical projects target specific markets the functioning of which is of major importance to social welfare, such as the banking sector, insurance markets, retail gasoline pricing and public procurement. For this reason, research by the group regularly features in national newspapers and international magazines. Group members also appear on television to contribute to the debate by

commenting on the developments in specific markets and the effects of these on competition. Maarten Pieter Schinkel, for instance, is frequently asked for media appearances commenting on the (non)competitiveness of the Dutch mortgage market. Group members also participate in governmental expert committees and provide targeted advice for particular policy issues. For instance, Sander Onderstal advised the Ministry of Economic Affairs on the design of the auction for mobile telecommunications, and Jo Seldeslachts was a member of the expert committee “Toekomst van toezicht” of the Dutch Wetenschappelijke Raad voor het Regeringsbeleid (WRR). Jeroen Hinloopen has recently become Deputy Director at the CPB.

## 12.4 Resources and Funding

- Standard funding from TI and ASE-RI
- Some group members (Schinkel) were up till recently partly financed by ACLE
- Funding from research priority area ‘Behavioural Economics’ for data gathering
- VENI-grant Buser
- Use of and access to CREED lab

## 12.5 Output

### *Key publications*

Bremzen, A., Khokhlova, E., Suvorov, A. and J. van de Ven. (2015). Bad News: An Experimental Study on the Informational Effects of Rewards, *Review of Economics and Statistics* 97, 55-70.

Buser, T., (2015). The effect of income on religiousness, *American Economic Journal: Applied Economics* 7, 178-195.

Buser T., Niederle, M. & Oosterbeek, H. (2014). Gender, Competitiveness and Career Choices. *Quarterly Journal of Economics* 129(3), 1409-1447.

Duso T., Röller L., Seldeslachts J. (2014). Collusion through joint R&D: An empirical assessment. *Review of Economics and Statistics* 96 (2), 349-370.

Haan, de T., Offerman, T. and R. Sloof, (2017), Discrimination in the labor market: The curse of competition between workers, *Economic Journal* 127, 1433-1466.

Onderstal, S., Schram, A. J. H. C., & Soetevent, A. R. (2013). Bidding to give in the field. *Journal of Public Economics*, 105, 72-85.

### *Forthcoming*

Koudstaal, M., Sloof, R., & van Praag, C. M. (Accepted/In press). Entrepreneurs: Intuitive or contemplative decision makers? *Small Business Economics*.

Sloof, R., & von Siemens, F. (Accepted/In press). Effective Leadership and the Allocation and Exercise of Power in Organisations. *Leadership Quarterly*.

### *E-publication ahead of print*

Boswijk, H. P., Bun, M. J. G., & Schinkel, M. P. (2019). Cartel Dating. *Journal of Applied Econometrics*, 34(1), 26-42. <https://doi.org/10.2139/ssrn.2860613>, <https://doi.org/10.1002/jae.2660>

Buser, T., & Yuan, H. (2018). Do women give up competing more easily? Evidence from the lab and the Dutch Math Olympiad. *American Economic Journal: Applied Economics*.

### *Publications in numbers*

<b>Output type</b>	<b>Classification</b>	<b>#</b>
Articles in journals	Refereed	5
	Non-refereed	0
	Professional	0
	Popular	0
Books or book chapters	Refereed	0
	Non-refereed	0
	Professional	0
	Popular	0
Conference proceedings		0
PhD theses		0
<b>Total</b>		<b>5</b>

### *Article in journal – refereed*

Buser, T., Gerhards, L., & van der Weele, J. (2018). Responsiveness to feedback as a personal trait. *Journal of Risk and Uncertainty*, 56(2), 165-192. <https://doi.org/10.1007/s11166-018-9277-3>

Buser, T., Geijtenbeek, L., & Plug, E. (2018). Sexual orientation, competitiveness and income. *Journal of Economic Behavior & Organization*, 151, 191-198. <https://doi.org/10.1016/j.jebo.2018.03.017>

Charness, G., Rustichini, A., & van de Ven, J. (2018). Self-confidence and strategic behavior. *Experimental Economics*, 21(1), 72-98. <https://doi.org/10.1007/s10683-017-9526-3>

Kopányi-Peuker, A. G., Offerman, T., & Sloof, R. (2018). Team production benefits from a permanent fear of exclusion. *European Economic Review*, 103, 125-149. <https://doi.org/10.1016/j.euroecorev.2018.01.005>

van Leeuwen, B., Noussair, C. N., Offerman, T., Suetens, S., van Veelen, M., & Van de Ven, J. (2018). Predictably angry-facial cues provide a credible signal of destructive behavior. *Management Science*, 64(7), 3352-3364. <https://doi.org/10.1287/mnsc.2017.2727>

### 13. SEO Economic Research

Programme title	SEO Amsterdam Economics
Name programme director	prof. dr. B. ter Weel
JEL-Classification	I, J, L, Q, R
Website	www.seo.nl

#### 13.1 Members of the research group and research in ftes

<i>Name</i>	<i>Title</i>	<i>Function</i>	<i>Total 2016</i>	<i>Total 2017</i>	<i>Total 2018</i>	<i>Funding</i>
<b>Scientific Staff SEO</b>						
Baarsma, B.E.	dr.	oz	0,08	-	-	3
Koopmans, C.C.	prof. dr.	hgl	0,80	0,53	0,8	3
Tieben, L.A.W.	dr.	oz	-	-	0,75	3
Weel, B. ter	prof. dr.	hgl	0,33	1,00	1,00	3
<b>Global Economics</b>						
Appelman, R.	msc	oz	0,33	0,56	-	3
Bergh-Spinakova, V. van den	drs	oz	-	-	0,84	
Jongorius, D.	msc	oz	-	0,33	0,96	
Oomes, N.A.	dr.	oz	0,78	1,00	1,00	3
<b>Big Data Science</b>						
Brouwer, E.	prof. dr.	hgl	-	0,33	1,00	3
Jong, G. de	msc	oz	-	-	0,21	3
Smits, T.C.	msc	oz	-	-	0,44	3
<b>Labour &amp; Education</b>						
Berg, E. van den	drs.	oz	1,00	1,00	1,00	3
Biesenbeek, C.	msc	oz	-	-	0,67	3
Bisschop, P.	msc	oz	1,00	1,00	1,00	3
Bussink, H.	msc	oz	-	-	0,17	3
Heyma, A.O.J.	dr.	oz	1,00	1,00	1,00	3
Graaf, D. de	drs	oz	-	-	1,00	3
Imandt, G.C.M.	msc	oz	0,67	-	-	3
Megens, L.A.	drs	oz	0,88	0,67	-	3
Ven, K. van der	msc	oz	-	-	0,63	3
Vervliet, T.	msc	oz	-	-	0,17	3
Vriend, S.	msc	oz	1,00	-	-	3
Werff, S.G. van der	msc	oz	1,00	1,00	1,00	3
Zwetsloot, I.	msc	oz	0,33	1,00	1,00	3
<b>Financial markets and Finance</b>						
Biesenbeek, C.	msc	oz	1,00	1,00	-	3
Hers, J.F.P.	drs.	oz	-	0,58	1,00	3
Hof, B.J.F.	drs.	oz	-	-	0,71	3
Kerste, M.W.M.	drs.	oz	1,00	0,33	-	3
Weda, J.W.T.	drs.	oz	0,79	-	-	3
Rougoor, W.	msc	oz	1,00	1,00	1,00	3
Veld, D.L. in 't	dr.	oz	-	-	0,63	3
Verheuvcl, N.	msc	oz	-	-	0,33	3

<b>Witte</b>	J.P.	m	sc	oz	0,33	1,00	1,00	3
<b>Health Care &amp; Social Security</b>								
<b>Kok</b>	L.M.	drs.	oz	0,84	0,84	0,84	3	
<b>Kroon</b>	L.V.	m	sc	oz	1,00	1,00	1,00	3
<b>Lammers</b>	M.	m	sc	oz	1,00	1,00	0,84	3
<b>Luiten</b>	W.	m	sc	oz	-	-	0,17	3
<b>Scholte</b>	R.S.	drs.	oz	1,00	1,00	0,17	3	
<b>Tempelman</b>	D.C.G.	drs.	oz	1,00	0,95	0,95	3	
<b>Vriend</b>	S.	m	sc	oz	-	1,00	1,00	3
<b>Regulatory Economics &amp; Sustainability</b>								
<b>Bent</b>	M. van	dr.	oz	0,50	1,00	0,25	3	
Buunk	E.	m	sc	oz	1,00	0,58	-	3
<b>Hof</b>	B.J.F.	drs.	oz	0,95	0,95	0,24	3	
Kocsis	V.	dr.	oz	0,49	-	-	3	
Rosenboom	N.	m	sc	oz	1,00	-	-	3
<b>Tieben</b>	L.A.W.	drs.	oz	1,00	1,00	0,25	3	
<b>Veld</b>	D.L. in 't	dr.	oz	-	1,00	0,24	3	
<b>Aviation Economics</b>								
<b>Boone</b>	kamp, T.	m	sc	oz	1,00	1,00	1,00	3
Burghouwt	G.	dr.	oz	1,00	0,75	-	3	
Kemp	T.	drs.	oz	0,34	0,15	-	3	
<b>Lies</b>	hout, R.B.T.	drs.	oz	1,00	1,00	1,00	3	
Spijker	V. van	m	sc	oz	1,00	1,00	-	3
Ubbels	B.J.	dr.	oz	-	-	-	3	
Veldhuis	J.G.	drs.	oz	0,06	-	-	3	
<b>Zuid</b>	berg, J.	m	sc	oz	1,00	1,00	1,00	3
<b>Competition, Market &amp; State</b>								
Behrens	C.	m	sc	oz	-	0,92	-	3
Buiren	K.B. van	drs.	oz	1,00	1,00	-	3	
Fijnje	J.C.	m	sc	oz	0,81	1,00	-	3
Gerritsen	M.	drs.	oz	-	-	-	3	
Leussink	L.	m	sc	oz	-	-	-	3
Rosenboom	N.	m	sc	oz	-	1,00	-	3
Smits	T.C.	m	sc	oz	1,00	1,00	-	3
Veld	D.L. in 't	dr.	oz	1,00	-	-	3	
Voort	J. van der	m	sc	oz	0,50	-	-	3
Total 1st flow of funds					0,00	0,00	0,00	
Total 2nd flow of funds					0,00	0,00	0,00	
Total 3rd flow of funds					32,81	32,14	28,26	
Total 1st f.o.f. excl. PhD's						0,00	0,00	
Total all flows of funds					32,81	32,14	28,26	
PhD students					0,00	0,00	0,00	

## 13.2 Programme design

SEO Amsterdam Economics was established in 1949, by the Economic Faculty of the University of Amsterdam, to encourage applied research. SEO is one of the Netherlands' oldest economic research agencies. SEO Amsterdam Economics was transformed into a foundation independent from the University in the 1980s, although it preserves close links with the academic community and the University.

Our clients are many and varied: we work for ministries, private companies and institutions in the non-profit sector, both nationally and internationally. SEO Amsterdam Economics is independent. We are not linked to specific interests and operate in a non-partisan way. In general, SEO reports are made public to guarantee our independence and scientific quality.

SEO Amsterdam Economics is a medium-sized organisation. We have a scientific staff of about 45, the majority of whom are economists and econometricians.

### *Structure*

SEO Amsterdam Economics consists of six research units. A first unit is **Labour & Education** which specialises in in-depth labour market analysis, research into education and the evaluation of policy. Research topics include employability, the transition from school to work, temporary work, re-integration and exit from unemployment, wage differentials, employment benefits, migration, schooling and work and the evaluation of educational policies.

The unit **Financial markets and Finance** helps clients with targeted financial-economic research and advice. Finance is a field that has traditionally been used mainly in the corporate sector, but nowadays is being used increasingly in the public sector as well. The unit's research and advice focuses on three areas: (1) financial regulation (2) financing of public activities, and (3) the interaction between the public and private sector.

The unit **Health Care & Social Security** analyses developments in healthcare and social security, with research often shaped by the highly regulated nature of these two sectors. This unit specialises among others in market analyses, assessments of the effectiveness of policy, cost-benefit studies and the development of budgeting and costing systems.

**SEO Aviation Economics** advises governments, airlines, airports, financial institutions and other interested parties on economic issues related to aviation. The unit's activities include operations research, econometric analyses and forecasting, feasibility studies and research into competition and market issues, as well as work in transport and regional economics.

The **Competition and Innovation Economics** unit specialises in the economic analysis of state aid and public tenders. Economic organization and the boundaries between public and private economic activity are other issues that are dealt with in this section.

The unit of **Global Economics** performs research on macro-economic issues related to international trade and development and advises international institutions on their programmes.

### *Organisation*

SEO Amsterdam Economics is governed by a six-member Supervisory Board. Day-to-day policy is carried out by the managing director and the deputy director. Moreover, SEO has a management team, which consists of the directors and the unit heads. SEO Amsterdam Economics also has an Advisory Board which meets yearly to review its research programme.

## 13.3 Programme Evaluation

Academic publications by researchers are often a spin-off of research for clients. This year 9 articles have been published in refereed journals or books. The number of non-refereed academic publications was substantial.

In 2018 SEO researchers published 63 commissioned reports, and 20 papers have been published in more popular outlets and newspapers.

## 13.4 Resources and Funding

SEO Amsterdam Economics does not receive any funding from the University or any other institution. All funds are raised by performing research for clients. SEO stimulates researchers to engage in science. Researchers at SEO Amsterdam Economics publish regularly in national and international professional journals.

SEO holds an NEN-EN ISO 9001:2008 quality certificate for Applied Economic Research and Consulting.

## 13.5 Output

### *Key publications*

Bisschop, P., Kastoryano, S., & Klaauw, B. van der (2017). Street prostitution zones and crime. *American Economic Journal: Economic Policy*, 9(4), pp. 28-63.

Akcomak, I.S., Webbink, D. & Weel, B. ter (2016). “Why did the Netherlands develop so early? The legacy of the Brethren of the Common Life,” *Economic Journal*, vol. 126, no. 593, pp. 821-860.

Scholte, R., Van den Berg, G.J., Lindeboom, M. (2015). Long-run effects of gestation during the Dutch Hunger Winter famine on labor market and hospitalization outcomes. *Journal of Health Economics* 39, pp. 17–30.

Lammers, M. (2014). The effects of savings on reservation wages and search effort. *Labour Economics*, 27(2014), 83-98.

Aalbers, R., Shestalova, V. & Kocsis, V. (2013). Innovation policy for directing technical change in the power sector. *Energy Policy*, 63, 1240–1250.

### *Forthcoming*

Biesenbeek, C. & Werff, S. van der (forthcoming). Public-Private Wage Differentials: Evidence from the Netherlands. *De Economist*.

Buiren, K. van, in 't Veld, D. & van der Voort, J. (forthcoming). State aid and competition: Application of a social welfare criterion to state aid. *Journal of Industry, Competition and Trade*.

Elk, R. van, Weel, B.J. ter, Wiel, K. van der & Wouterse, B. (forthcoming). Estimating the Returns to Public R&D Investments: Evidence from Production Function Models. *De Economist*.

Jong, G. de, Behrens, C.L., Herk, H. van & Verhoef, E.T. (forthcoming). Domestic Market Power in the International Airline Industry. *Transportation Science*.

Rosenboom, N. & in 't Veld, D. (forthcoming). The interaction of public and private cartel enforcement. *World Competition*.



### ***Publications in numbers***

Output type	Classification	#
Articles in journals	Refereed	8
	Non-refereed	21
	Professional	14
	Popular	6
Books or book chapters	Refereed	1
	Non-refereed	0
	Professional	0
	Popular	0
Reports	Academic	1
	Professional	59
Conference proceedings		0
PhD theses		0
Total		110

#### ***Article in journal – refereed***

Bisschop, P., Ouwehand, T., Weel, B. ter & Zwetsloot, J. (2018). Post-initiële schooling stimuleren met kleine interventies. *Tijdschrift voor Arbeidsvraagstukken*, 34(3), 314-337.

Boonekamp, T., Zuidberg, J. & Burghouwt, G. (2018). Determinants of air travel demand: The role of low-cost carriers, ethnic links and aviation-dependent employment. *Transportation Research Part A: Policy and Practice*, 112, 18-28. <https://doi.org/10.1016/j.tra.2018.01.004>

Braat, B. & Rosenboom, N. (2018), Privaatrechtelijke handhaving van het mededingingsrecht en de collectieve schadeafwikkeling, *Tijdschrift voor Europees en economisch recht*, nummer 1, 2018.

De Jong, G., Behrens, C., & van Ommeren, J. (2018). Airline loyalty (programs) across borders: A geographic discontinuity approach. *International Journal of Industrial Organization*.

Snoek, M., Knezic, D., Berg, E. van den, Emmelot, Y., Heyma, A. & Sligte, H. (2018). Impact of in-service Master of Education programmes on teachers and their working environment. *European Journal of Teacher Education*, 41(5), 620-637. <https://doi.org/10.1080/02619768.2018.1529755>

Sviták, J. & Brouwer, E. (2018). De algoritmische waakhond: Datagedreven mededingstoezicht. *Tijdschrift voor Toezicht*, 9(2), pp. 57-64. <https://doi.org/10.5553/TvT/187987052018009002005>

Weel, B. ter (2018). The Rise of Temporary Work in Europe. *The Economist*, 166(4), 397-401. <https://doi.org/10.1007/s10645-018-9329-8>

Yang, H., Burghouwt, G., Wang, J., Boonekamp, T. & Dijst, M. (2018). The implications of high-speed railways on air passenger flows in China. *Applied Geography*, 97, 1-9. <https://doi.org/10.1016/j.apgeog.2018.05.006>

#### ***Article in journal - non-refereed***

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Biesenbeek, C. & Heyma, A. (2018). Arbeidsmigranten slechts gedeeltelijke oplossing voor onvervulde vacatures, in: *Economische Statistische Berichten*, online gepubliceerd

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- Biesenbeek, C. (2018). Leraren voortgezet onderwijs vaak ondergewaardeerd, in: *Economische Statistische Berichten*, online gepubliceerd <https://esb.nu/kort/20037597/leraren-voortgezet-onderwijs-vaak-ondergewaardeerd>
- Bisschop, P., Werff, S. van der & Zwetsloot, J. (2018). De waarde van een economiestudie op de arbeidsmarkt, in: *Economische Statistische Berichten*, online gepubliceerd <https://esb.nu/esb/20043194/de-waarde-van-een-economiestudie-op-de-arbeidsmarkt>
- Brouwer, E. & Smits, T. (2018). Helft van alle downloads was illegaal, in: *Economische Statistische Berichten*, online gepubliceerd <https://esb.nu/kort/20043794/helft-van-alle-downloads-was-illegaal>
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Kok, L., Lammers, M., Weel, B.J. ter & Soest, van A. (2018). Vroegpensioenregelingen voor zware beroepen, *Pensioen Magazine*, 2, pp. 26-30.

Lieshout, R. (2018). How inconsistent CO2-valuations may distort airport competition. *Airport Business Magazine*, online gepubliceerd <http://www.airport-business.com/2018/10/inconsistent-co2-valuations-may-distort-airport-competition/>

Smooenburg, M. van, Werff, S. van der & Zwetsloot, J. (2018). Grote verschillen in arbeidsmarktpositie academici, *UWV*, online gepubliceerd <https://www.uwv.nl/overuwv/Images/grote-verschillen-in-arbeidsmarktpositie-van-academici.pdf>

Tieben, B. (2018). De slechte business case van kernenergie, *Energiepodium.nl*, online gepubliceerd <http://www.energiepodium.nl/opinie/item/de-slechte-business-case-van-kernenergie>, 21 November.

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Begina, R., Buiren, K. van & Ys, E. (2018). Pleidooi voor groei in Caribische deel Koninkrijk, *Het Antilliaans Dagblad*, 18 April.

Koopmans, C. (2018). Autonome auto's zullen onze mobiliteit ingrijpend veranderen, *Het Financieele Dagblad*, online gepubliceerd <https://fd.nl/opinie/1237580/autonome-auto-s-zullen-onze-mobiliteit-ingrijpend-veranderen>, 19 January.

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### **Book / book chapter – refereed**

Tieben, B. (2018), Equilibrium and uncertainty, in S. Dow, J. Jespersen en G. Tily (eds.), *Money, Method and Contemporary Post-Keynesian Economics*, Cheltenham, UK: Edward Elgar, pp. 108-119.

### **Report – academic**

Bijker, W., Cantillon, B., Joustra, T., Weel, B. ter, Goede, P. de (2018). Meer dan ooit nodig, in: *WRR*, Den Haag.

### **Report – professional**

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- Boonekamp, T., Spijker V. van & Zuidberg, J. (2018). Monitor Netwerkkwaliteit en Staatsgaranties. *SEO-rapport 2018-14*. Amsterdam: SEO
- Zuidberg, J., Haan, F. de, Portier, M. & Lieshout, R. (2018). A Financial Analysis of Seletar Airport. *SEO-rapport 2018-69*. Amsterdam: SEO
- Zuidberg, J. (2018). Benchmark luchthavengelden en overheidsheffingen. *SEO-rapport 2018-15*. Amsterdam: SEO
- Zuidberg, J. & Vinkx, K. (2017). Capacity demand at Schiphol Airport. *SEO-rapport 2017-69*. Amsterdam: SEO

## Activities

### *Talk or presentation*

Bas ter Weel, 'En toen was er krapte. Wat nu?', DNB/Nederlandse Economendag, 2 november, Amsterdam.'

Bas ter Weel, 'De implicaties van macrobeleid voor de Nederlandse economie: Volatiliteit en procyclisch beleid', Willem Drees Fonds, 4 oktober, Den Haag.

Bas ter Weel, 'Kluseconomie in Nederland: omvang en beleidsimplicaties', NGSZ, 3 september, Den Haag.

Bas ter Weel, 'Back to the future: de impact van robots voor het advocatenberoep', 'VAAN Congres, 28 juni, Breukelen.

Bas ter Weel, 'De opgave en timing van de energietransitie in de metropoolregio', Metropoolregio Amsterdam, 28 juni, Zaanstad.

Bas ter Weel, 'De match tussen mens en machine', VRC Congres, 20 juni, Den Haag.

Bas ter Weel, 'Relatie tussen technologie op werk en (R)evolution@work', Stichting P&V, Brussel, 13 juni

Bas ter Weel, 'Een andere kijk op het tekort aan zorgprofessionals', BNR Zorgdebat, Utrecht, 12 juni.

Bas ter Weel, 'Verdienvermogen van de BV Nederland, discussie tijdens presentatie Wereldbankrapport verschenen rapport 'Growing United: Upgrading Europe's Convergence Machine, Ministerie Economische Zaken, Den Haag, 14 mei.

Bas ter Weel, 'Toekomst inkomensverzekeringen', Allianz, Loosdrecht, 5 april.

Bas ter Weel, 'En toen was de arbeidsmarkt opeens krap. Wat nu', UWV Arbeidsinformatiedag, Utrecht, 5 maart.

Bas ter Weel, 'Arbeidsmarktbeleid in een verkrappende arbeidsmarkt, ministerie van Sociale Zaken en Werkgelegenheid, 30 januari.

Bert Tieben, 'Economische impact DDoS aanvallen', seminar NBIP en SIDN, Utrecht, 19 november

Bert Tieben, 'Economisten moeten meer onderzoek doen naar ondernemerschap in de praktijk', ESHET-conference Entrepreneurship, Knowledge and Employment, Madrid, 7 juni

Brouwer, E., 'Kansen en bedreigingen Big Data Science', voor VVD bestuurders 'Thematisch Netwerk Binnenlandse Zaken' in de fractiekamer, 8 oktober.

Carl Koopmans, 'Inleiding over MKBA in transitie', InfraTrends congres, Delft, 15 november

Carl Koopmans, 'Keynote over een luchthaven in zee', Dutch Aviation Group, Noordwijk, 28 mei

Djoerd de Graaf, 'Monitor Associate degree', 1<sup>e</sup> landelijke Ad-conferentie, Almere, 8 november.

Emina van den Berg, 'De impact van professionaliseringstrajecten op leraren en hun omgeving', 'Effecten van een hbo-masteropleiding op leraren en hun omgeving', Onderwijs Research Dagen, 14 juni.

Emina van den Berg, 'Posterpresentatie over Effecten van een masteropleiding op leraren en hun omgeving', OCW Kennisfestival, 15 maart.

Koert van Buiren, 'Public Service Obligation in Air Transport', 'Let's get connected', Willemstad, Curacao, 28 Juni.

Lennart Kroon, 'Onderzoek over de Wajong', 'Actielab' Vrije Universiteit Amsterdam, Amsterdam, 21 November.

Lucy Kok, 'Kijk op Kinderopvang' (panellid), Sociaal en Cultureel Planbureau, 30 september

Marloes Lammers, 'Het risicovereveningsmodel ZVW, NZA, 22 maart.

Nienke Oomes en Joost Witteman, 'Hoe pakken veranderingen in handelskosten uit voor individuele landen?', Masterclass financiële journalistiek, Den Haag, 1 november 2018

Paul Bisschop, 'Licht op schaduwonderwijs', Oberon – Schoolleidersberaad VO region Haaglanden, 15 juni

Rogier Lieshout, 'Waarheen met de Nederlandse luchtvaart?', NLR, 6 november

Rogier Lieshout, 'How CO<sub>2</sub>-valuations affect airport competition', 36<sup>th</sup> ACI EUROPE Economics Committee meeting, 27 september

Rogier Lieshout, 'Aviation economics', Summer course Directie Luchtvaart, Amsterdam, 25 september

Rogier Lieshout, 'Waarheen met de Nederlandse luchtvaart?', Koninklijke Industriële Grootte Club | Luchtvaart & Defensie Tafel, 19 september

Rogier Lieshout, 'Air connectivity between China and Europe', European Travel Commission | EU-China connectivity summit, Florence, 6 september

Rogier Lieshout, 'More restrictive aviation agreements post-Brexit' ACI EUROPE Economics Committee, Stockholm, 24 mei

Rogier Lieshout, 'Effecten vliegbelasting op netwerkkwaliteit Schiphol', 22 mei

Rogier Lieshout, 'Connectivity workshop', Incheon International Airport Corporation, 28 & 29 juni

Rogier Lieshout & Thijs Boonekamp, 'More restrictive aviation agreements post-Brexit', ACI Europe, Brussel, 24 januari.

Rogier Lieshout & Thijs Boonekamp, 'More restrictive aviation agreements post-Brexit', UK Airport Operators Association, London.

Rogier Lieshout, 'Scarce airport capacity', 13<sup>th</sup> Aviation Management Conference, 16 januari.

Thijs Boonekamp, 'Future trends in air travel demand and Propensity to Fly', EUROCONTROL/ITF workshop "Propensity to Fly", 4 december

Thijs Boonekamp, 'Ontwikkelingen in de luchtvrachtindustrie', Luchtvrachtcongres, Hoofddorp, 29 november

Thijs Boonekamp, 'impact van schaarse luchthavencapaciteit op prijzen van vliegtickets', Economenlunch ACM, 19 februari.

Tobias Vervliet, 'Referaat over CPB-paper', Erasmus School of Health Policy & Management (EUR), 11 december.

### ***Media appearances***

Bas ter Weel geïnterviewd over Prinsjesdag 2018, NPO Radio 1, 18 september, online gepubliceerd <https://www.nporadio1.nl/homepage/11912-dit-was-prinsjesdag-2018>

Bas ter Weel in de Podcast met Paul ter Liempt over 'nieuwe technologie kost eerst banen, maar maakt ons daarna rijker', RTL Z, 16 februari.

Bert Tieben geïnterviewd over de loterijenmarkt, Radio 1, 13 juni

Bert Tieben geïnterviewd over de loterijenmarkt, NOS Journaal. 13 juni

Bert Tieben geïnterviewd over de salarisverhoging voor ING topman Hamers, NPO Radio 1, 8 maart.

Carl Koopmans geïnterviewd over 'de overheid vergroot de files', BNR Nieuwsradio, 20 juni.

Carl Koopmans geïnterviewd over de kosten van ziekteverzuim, BNR Nieuwsradio, 15 maart.

Carl Koopmans geïnterviewd over de nieuwe cijfers van files, BNR Nieuwsradio, 21 februari.

Carl Koopmans geïnterviewd over de kosten van carnaval, BNR Nieuwsradio, 9 februari.

Erik Brouwer geïnterviewd over 'Wie wordt kampioen van de eredivisie?', BNR Nieuwsradio, 13 september.

Joost Zuidberg over het voornemen van Ryanair om geld in rekening te brengen voor rolkoffers, Radio 2 'Jan Willen staat op', 24 augustus.



Joost Zuidberg over 'Lelystad is niet voldoende, Schiphol moet ook zelf groeien', BNR Nieuwsradio, 4 mei

Rogier Lieshout geïnterviewd over 'Piloot worden? Vliegmaatschappijen staan te springen om nieuwe vliegers', EenVandaag, 21 juni

Rogier Lieshout geïnterviewd over of 'KLM op eigen benen verder zou kunnen', BNR Nieuwsradio, 8 mei.