Research review

Economics & Business

2008-2014

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Report on the Economics & Business Research Review

Contents

Preface

This review is concerned with the academic quality and societal relevance of research in economics and business conducted at six universities in the Netherlands, as well as with the viability of the research units conducting the research. Furthermore the committee has paid special attention to the structure and quality of PhD programmes, including one interuniversity graduate programme. The breadth of the fields covered necessitated a committee of equal breadth, so a rather large committee of ten academics from research institutes from three different continents met with the various research units for a total of seven days.

We have been impressed by the constructive nature of the conversations with different managerial and academic representatives and the willingness to engage in open exchanges about the pros and cons of current approaches and the possibility to consider alternatives. Those discussions were greatly facilitated by the fact that by and large all research units have very similar goals so that the discussions could be about strategy and effectiveness to reach these goals.

We are grateful to the research leaders, the academic staff and the PhD candidates at each of the universities, who freely provided us with a wealth of information, both in writing and during the site visits. We recognise how time-consuming it is to compile such information.

The committee is highly indebted to Floor Meijer, the secretary to the review. She provided the committee with timely information before and during our meetings, made sure our work adhered to the criteria, policies and procedures, of the Standard Evaluation Protocol, and played the key role in recording information during the meetings and then in compiling and editing the report. She kept us on track during all stages of the review. Without her the committee would have been utterly helpless.

Within the context of the Standard Evaluation Protocol, the committee sees its goals of the review to contribute to the improvement of the quality of research and to help the research units to achieve further improvements towards their stated goals. It is in this spirit that this report should be read. Our aim is to assist the research units to achieve their mission by providing an unbiased outsiders' view.

Arie Kapteyn
Chair of the committee

1. The review committee and the review procedures

Scope of the assessment

The Economics & Business committee was appointed by the Executive Boards of Erasmus University Rotterdam (EUR), Maastricht University (MU), the University of Amsterdam (UvA), University of Groningen (RUG), Utrecht University (UU) and Vrije Universiteit Amsterdam (VU) to perform an assessment of the research units in Economics & Business at the aforementioned universities. Tinbergen Institute (TI), the joint Research School in Economics of the School of Economics of EUR, the Faculty of Economics and Business of UvA and the Faculty of Economics and Business Administration of VU, was also part of the assessment.

The assessment covers the research that was conducted in the period 2008-2014, as well as the research strategies that were outlined for the 2015-2020 period. In this sense the assessment was both retro- and prospective.

In accordance with the Standard Evaluation Protocol 2015-2021 for Research Assessment in the Netherlands (SEP) and the Terms of Reference (TOR) specified by the participating research units, the committee's task was to assess the (1) academic quality, (2) societal relevance and (3) viability of the participating research units in relation to their strategic targets, and to advise on further improvements. Each of the three SEP criteria had to be scored against international standards by using a 4-point scale, ranging from 1 (world leading/excellent) to 4 (unsatisfactory). The SEP criteria and rating system are described in more detail in Appendix 1.

Furthermore, SEP 2015-2021 instructs review committees to devote special attention to research integrity policies and the quality of PhD programmes, both at the level of the research unit and in associated interfaculty or interuniversity Research Schools. In the case at hand, this meant that alongside the supervision and instruction of PhD candidates at the local level, the scientific quality and administrative effectiveness of the interuniversity Tinbergen Institute was scrutinised. The committee's conclusions on TI are presented in a separate chapter of the report.

Composition of the committee

The Economics & Business committee consisted of the following ten members:

- Prof. Arie Kapteyn (chair), Professor of Economics at Dornsife College of Letters Arts and Sciences, and Executive Director of the Center for Economic and Social Research (CESR), University of Southern California, USA;
- Prof. Giuseppe Bertola, Professor of Economics at EDHEC Business School, France, and Università degli Studi di Torino, Italy (50% part-time each for 2015-16);
- Prof. Raymond De Bondt, Emeritus Professor of Managerial Economics, Strategy and Innovationat KU Leuven, Belgium;
- Prof. Matthias Jarke, Professor of Information Systems and Databases, RWTH Aachen University and Fraunhofer FIT, Germany;
- Dr. George Gelauff, Director of KiM Netherlands Institute for Transport Policy Analysis, the Netherlands;
- Prof. Jan Olhager, Professor of Operations Management at Lund University, Sweden;

- Prof. David Otley, Professor Emeritus of Accounting & Management at Lancaster University Management School, UK;
- Prof. John Saunders, Professor Emeritus of Marketing at Aston Business School, UK;
- Prof. Henri Servaes, Professor of Finance at London Business School, UK;
- Prof. Edward Snape, Professor of Management at Durham University Business School, UK.

Short Curricula Vitae of the committee members are included in Appendix 2.

Dr. F. (Floor) Meijer of Quality Assurance Netherlands Universities (QANU) was appointed secretary to the committee.

Independence

All members of the committee signed a statement of independence to safeguard that they would assess the quality of the research units in an unbiased and independent way. Any existing personal or professional relationships between committee members and the staff of the research units under review were disclosed and discussed during the initial committee meeting. The committee concluded that there were no unacceptable relations or dependencies and that there was no specific risk in terms of bias or undue influence.

Data provided to the committee

The committee has received the self-evaluation reports of the unit under review, including all the information required by the Standard Evaluation Protocol (SEP), with appendices.

The committee also received the following documents:

- Evaluation Protocol 2015 for the review of the fields of Economics and Business, including Terms of Reference;
- Bibliometric benchmark study on the Dutch Universities in the field of Economics & Business 2008-2013/14 (CWTS, 2015);
- Erasmus School of Economics (ESE) research performance analysis (2008-2013/2014) (CWTS, 2015);
- Key publications of the research units under review;
- Standard Evaluation Protocol 2015-2021.

Procedures followed by the committee

Before the start of the site visit, each research unit was assigned to three reviewers, who independently formulated a preliminary assessment. The first reviewer was chosen on the basis of his expertise in the domain of the unit; the second and third reviewers were chosen to provide a more general, complementary perspective. To ensure an insightful assessment of the societal relevance of the participating research units, committee member Dr. George Gelauff, who is a representative of the professional field, was asked to devote special attention to the SEP criterion of 'Relevance to society'.

At the start of the site visit, which took place in Utrecht from September 21st until September 29th 2015, the committee was briefed by QANU about research assessment according to SEP, and discussed the preliminary assessments. The committee also agreed upon procedural and other aspects of the assessment. After discussing the self-evaluation reports, key publications and its preliminary findings, the committee conducted interviews with (1) representatives of the Faculty Boards, (2) the management of the research units, (3) representatives of the

Graduate Schools responsible for PhD training, (4) a selection of academic staff working in the research units and (5) a selection of PhD candidates. The schedule for the site visits is included in Appendix 3. The first reviewers led the interviews, with the second reviewer and the other committee members having opportunities to ask questions. After each interview the committee took some time to prepare a preliminary assessment and there was also a detailed meeting at the end of each day to reflect on the site visit of the day.

At the end of the site visit, the committee took time to discuss the comments and scores of all the research units under review. The final assessments are based on the documentation provided by the institutes, the key publications, and the interviews.

The texts for the committee report were finalised through email exchanges. The first reviewer was responsible for writing the draft assessment and for sending it to the second and third reviewer for amendment and/or approval. After all reviewers approved the assessments, the secretary compiled the report and returned it to the committee for final approval. The approved version of the report was presented to the Faculties for factual corrections and comments.

The final report was sent to the University Boards, and published on the websites of the participating universities and the QANU website.

2. General Remarks

Protocol changes
In contrast to previous assessments, the new Standard Evaluation Protocol (SEP) prescribes evaluations at the level of research units, which generally are considerably larger (at least 10 research fte's) than the research programmes that were the unit of analysis in the past. The result has been that the six universities evaluated in this report have put forward either one or two units. UM, EUR, RUG, and UU have submitted reports on their joint business and economics research, while UvA and VU have reported separately on economics and on business. In the case of EUR, a further complication is that the Rotterdam School of Management (RSM), which shows considerable overlap with the business economics sections of the Erasmus School of Economics (ESE), is not part of the evaluation. Hence, one should keep in mind that from that perspective, the committee's report only covers part of research in business at EUR.

A second important change in comparison to the evaluation protocol in the past is that when referring to research quality, the rating scale ('quantitative assessment') has been condensed to a four-point scale, where the highest rating (1) reflects 'world leading/excellent', while the lowest ranking (4) denotes 'unsatisfactory'. In view of the breadth of the units being assessed, a rating of 1 would essentially imply that the unit is at the same level as the very best universities in the world, such as Harvard or Chicago. Such ratings are conceivable, and indeed justified sometimes, for smaller units (such as departments or research programmes), but unlikely for a complete school (for reasons discussed further below). Effectively therefore, the four point scale is reduced to a three point scale. Since furthermore the committee finds that none of the schools' performances merits the label 'unsatisfactory', *de facto* the four-point scale is reduced to a two-point scale. Although there are occasional deviations, in view of the general very good performance of the schools in economics and business administration in the Netherlands, almost all ratings end up as a 2. This does not mean that all schools are equivalent on all dimensions, but rather that the quantitative rating is too coarse to reflect the differences that exist. As a result, the narrative descriptions in this report should be seen as considerably more informative than the quantitative scores.

The evaluation of broad research units also limits the opportunity to consider individual research contributions in depth. As a result of this, the evaluation has to rely more on indirect evidence of quality, such as number of publications in highly rated journals – possibly normalised by the number of research fte's – or the total amount of money acquired through grants and contracts. Despite the best efforts of the universities supplying the information, comparability turns out to be a major challenge and hence the committee had to rely to a substantial extent on the information collected during the site visits, in particular information reflecting strategies and policies aimed at quality maintenance and improvement.

Overall assessment
Overall, the committee believes the research in economics and business administration in the Netherlands to be of high quality (which merits a rating of 'very good').

Organisational aspects
All universities appear to have organised their economics and business research in 'research programmes'. This is largely a reflection of the way evaluations took place in the past, when the research programmes were evaluated separately. The research units vary in the weight they give to research programmes in their organisational structure. In the simplest case,

research programmes overlap completely or largely with departments, and the administrative burden of the extra administrative layer appears to be limited. In other cases, research programmes appear to form a rather elaborate administrative layer with its own managerial and reporting structure. Research units vary in their assessment of the usefulness of research programmes. In general the committee encourages the research units to have a critical look at their administrative structures and whether streamlining and simplification is possible. It is the committee's distinct impression that in a number of cases this would aid transparency and reduce administrative burden.

The goals of departments are usually similar in terms of research quality and publication standards. However there is considerable variation in the extent to which the departments explicitly mention management instruments (such as incentives for more research time; facilities for grant writing, etc.) that are related to the formulated goals. The committee would encourage research units to compare policies and adopt what would appear to be best practices. Clearly, without a toolbox with coherent instruments it is doubtful that goals will be achieved.

International competition

Having adopted internationally agreed standards of research quality, Dutch institutions face strong international competition for excellent faculty. Several research units mentioned the limitations imposed by university salary rules. There are at least two ways in which Dutch universities can improve their competitiveness in the international market for top researchers. The first approach is to provide ample protected research time to new hires as well as generous research budgets, lively visitors programmes and excellent facilities. The research units vary in the extent to which these instruments are put to work, but all of them use them to some degree. Most research units have a strong international orientation and try to encourage faculty members to spend time at foreign institutions (particularly in the US) while maintaining active seminar and visitor programmes.

The second approach would be to tackle the salary competition head on. In exceptional cases, there is no alternative than to pay exceptional salaries to exceptional researchers. To the extent that this is outside the scope of the research units, the committee strongly advises policy makers at higher levels (either at the university level or at the national level) to consider options for providing competitive compensation packages to exceptional talent. Otherwise, economics and business research in the Netherlands may have reached a plateau and further improvement may become difficult.

A natural question is how a limited number of high salaries can be financially supported. The committee believes that more can be done to broaden the financial base of the research units. It is striking that the term 'endowed chair' is often used for professorships that receive a limited top-up of a regular salary for a limited duration, in contrast to the international meaning of the term, where it implies an endowment of several millions of euros and an appointment for life. In particular internationally recognised top-researchers should be an attractive target of 'real' endowed chairs. More generally, in a world with anticipated shrinking government funds made available for research, it is advisable to develop a much more coherent strategy for the acquisition of external funds. Such funds should not only serve the goal of paying for excellent faculty members, but also to improve the overall student and research experience (e.g. scholarships, physical facilities including buildings, etc.).

Many references are made to US and UK top universities. Although there are differences between continental Europe on the one hand, and the US and UK on the other, that are

difficult to overcome, as a first step one should examine the most successful departments worldwide and consider best practices. More generally, units may be advised to consider who their peers are worldwide, and who they would like to aspire to be like.

Recruiting and retention

All research units now use an Anglo-Saxon tenure track system, mostly with a 6-year tenure clock and including hiring on the international market. Mostly criteria for tenure are clear and so are criteria for promotion to full professor. Most research units have abandoned the traditional set-up of a fixed number of full professorships, but not all to the same degree. Limiting the number of full professorships *a priori* unnecessarily restricts the recruiting and retention tools one has available for optimisation of the quality of research faculty. Particularly in this respect it is advisable to learn from best practices at the world's top research institutes.

The possibility to offer new junior faculty members a clear career path with well-defined milestones should help in attracting high quality researchers. Universities vary in the extent to which these milestones are prescribed in detail. Although the committee applauds the clarity of precisely described criteria, these should not degenerate to mechanical procedures where judgement by academic peers gets replaced by checking a number of boxes on a form. Certainly for promotion to full professor, judgement by outsiders (both in writing and in person) should be part of the process.

Diversity

One of the striking aspects of the personnel composition of the research units is the very limited representation of female faculty members in the higher ranks. In all research units the percentage of female faculty members decreases with the increase in rank. Several of the research units have argued that this is just a cohort effect and that with the passage of time the imbalance will rectify itself. The committee is less optimistic about this and believes that targeted actions are needed. Some universities have put in place explicit policies to facilitate the careers of female faculty members, but several units do not appear to go much beyond lip service.

A somewhat similar observation can be made with respect to the representation of non-Dutch faculty members in higher ranks. One explanation that has been given is that for several administrative positions, speaking Dutch is still an advantage, e.g. when dealing with the central administration. Be that as it may, for the sake of quality (and as a signal of quality) it is advisable to remove any barrier for non-Dutch faculty members to feel at home at Dutch universities.

PhD training

The PhD programmes are generally well structured. They by and large follow the best Anglo-Saxon models but there are remnants of previous models where individual PhD candidates are selected by, and mostly attached to, individual faculty members. Education programmes are well thought through and supervision is generally well organised. Increasingly, universities are aware of the importance of good placements of new graduates, both for the sake of the graduate him/herself and for the reputation of the research school. There is still variation in the thoroughness of the preparation for a career after graduate school, but it should be feasible to raise the preparation for the job market to the same high level across all schools. Similarly, all PhD programmes acknowledge the importance of their PhD candidates being exposed to the best research in their field of specialisation. All PhD candidates should have opportunities to spend considerable periods at high quality institutions abroad. Although all

schools facilitate such visits, some are more systematic in this than others. Also here, it should be easy for all schools to adopt best practices quickly.

All research units report to have a policy of not hiring their own students on the grounds that it is in the interest of both the newly minted PhD and the department that PhD candidates go out to gain new experiences, while the department benefits from the recruiting of new researchers with different backgrounds. However, there appears to be a substantial gap between this professed philosophy and actual implementation. According to the information provided to the committee by the universities, up to 27% of own graduates get hired by departments immediately after graduation. This policy is not in the interest of the graduates and entails a real risk of creating an inward looking and insular research environment.

Research integrity
Research integrity has quickly gained in prominence. All schools acknowledge the importance of research integrity. There is a fair amount of variation however in how far along the research units are with implementation. Most schools have the formal structure and procedures in place, but the committee detected differences in the extent to which these issues are part of an active discussion, for example in research seminars and the research training programme. There is definitely more work to be done.

Societal relevance
Societal relevance has clearly gained attention from the research units. In their narratives units illustrate a broad range of linkages to society. For instance, their research directly benefits public policy. Researchers partake in the national debate on how to understand and tackle the economic crisis. Or researchers cooperate with companies.

To some degree structural differences between units manifest themselves in their relevance to society. Business schools usually have strong links to companies and educate large groups of practitioners. In economics this is much less prominent. Some universities include applied research institutes in the research unit under consideration, whereas others have outsourced these activities to separate institutes. That directly affects the share of funding from contract research and the number of publications relevant to society. The committee tried to take these structural differences into account as well as possible.

The committee also found that strategies differ. Some units set clear goals concerning their impact on society, while others primarily focus on research quality and see societal relevance as a consequence of their research strategy. The latter do not adopt strong policies to enhance societal relevance. In this respect the committee has primarily focused on assessing whether research units adopt concrete policy measures to reach the goals on societal relevance they set for themselves.

An interesting topic that arose in the discussions is the question whether a trade-off exists between quality and relevance or whether the two are complementary. Diverting resources from quality to invest in relevance would indicate a trade-off. Yet, complementarity characterises several best practices presented to the committee. In these cases linkages to society yield challenging research questions. Or cooperating with companies, research units gain access to unique data that benefits research. Explicitly asking for examples of such complementarity may benefit the SEP in the future.

Research units generally show awareness of the necessity to prevent public funds being used for market activities. Research for companies should not result in pure consultancy. Indeed

those kinds of activities can be fully outsourced. Emphasising the criterion of research quality guards against this risk.

Since the top rating reads 'outstanding' instead of 'world leading', the SEP allows more differentiation in rating societal relevance. The committee has primarily interpreted societal relevance to pertain to the Netherlands or the region where a university is situated. At times knowledge of the specific Dutch situation helped to put narratives from universities into perspective.

Assessment of Research Units

3. Erasmus University Rotterdam, Erasmus School of Economics (ESE)

3.1 Introduction

Organisation, leadership, strategy and targets

Erasmus School of Economics (ESE) is the Economics Faculty of Erasmus University Rotterdam (EUR). Its four Departments (*Applied Economics*, *Econometrics*, *Economics* and *Business Economics*) each have their own research programme. As the largest of the Departments *Business Economics* has two programmes, bringing the total to five research programmes:

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

The number of programmes was reduced since the previous review, as it is believed that bigger programmes are more likely to be successful in acquiring external funding.

While the Dean of the Faculty holds ultimate responsibility for ESE as a whole, the Departments also play an instrumental role in the implementation of the school's research strategy.

ESE's research activities are facilitated by two research institutes, which also function as Graduate Schools. Tinbergen Institute (TI) and Erasmus Research Institute of Management (ERIM). TI focuses on economics, including business economics and econometrics, and is a joint effort of EUR, UvA and VU. ERIM is a collaboration of two of EUR's own faculties, ESE and the Rotterdam School of Management Erasmus University (RSM). Its focus is on business management. To qualify for full membership of a research institute, staff members need to meet publication requirements. Double TI/ERIM fellowship is possible.

ESE's strategy for the reporting period focused on increasing its impact *within* as well as *outside of* academia. The school sought to promote its scientific excellence by putting quality over quantity. To increase the number of publications in top journals, it adjusted its criteria for promotion/tenure and membership of the research institutes ERIM and TI. Furthermore, ESE pursued grants with academic prestige. With regard to PhD projects, high quality end results are deemed more important than completion within the designated period. To increase its societal relevance, ESE aimed to valorise its research through collaboration with non-academic partners, media appearances of staff members, participation in boards and advisory councils, and knowledge transfer via spin-off companies.

ESE's strategy for the future also centres on prioritising quality over quantity and differentiates between short-term and long-term goals. The short-term strategy mentioned in the self-evaluation report is to 'preserve its position as a leading school in continental Europe' (and, notably, stay ahead of the competition in the Netherlands), the longer term strategy is to narrow the gap with the global elite schools of the US and UK, especially in specific domains such as health inequity, marketing of innovation, regulation of the financial sector and sustainable transport planning. The overall strategy of ESE rests on five pillars. First, as

mentioned previously, ESE wants to continue emphasising quality over quantity. In addition to the list of journals with an AIS (Article Influence Score) above the 80th percentile, ESE has a further journal lists in which it identifies primary and primary star journals. The latter list contains the highest quality journals in which faculty members of the world's top business schools and economics departments are expected to publish. Second, ESE wants to focus on young faculty – virtually all of the hiring has been at the assistant professor level. The goal is very much to develop senior faculty members internally. Third, ESE wants to develop and intensify cooperation with US schools. PhD candidates and faculty have been encouraged to visit top US universities. These visits (typically 3-6 months) are fully paid by ESE. ESE is planning to increase its budget for these kind of visits both money- and time-wise. Fourth, ESE wants to improve the societal relevance of its research. Fifth, ESE wants to increase funding from grants, given the reduction in primary funding.

Resources

The academic staff of ESE has increased over the reporting period, from a total of 81.9 fte in 2008 to a peak of 119.5 fte in 2013. Because of a drop in PhD numbers, the total number of fte has fallen back to 102.7 in 2014. As a result of the HR policy to focus on (international) young talent, growth has mostly occurred at the junior level. In 2009 a 'tenure track' approach was introduced at EUR. When young faculty meet the targets regarding publication, societal relevance, administration, education and grants, they can expect tenure after approximately 5 years (it is called a 6-year clock). In the self-evaluation report the staff are described as a 'committed work force with a good balance between seasoned scholars and young talent'. The latter reportedly bring in new topics and approaches for research, as well as new research networks. Roughly 40% of the current staff is non-Dutch. Women are underrepresented at all levels, although less so in the lower ranks. While 42% of PhD candidates and 37% of assistant professors were female in 2014, there were no female full professors, and just 10% of associate professors are women. During the interviews, the Faculty Board mentioned that it considers moving towards an 8-year tenure-track system in order to support female staff members who have more problems in meeting the criteria because of maternity leaves during the tenure track.

The growth of the number of staff reflects a significant increase of annual research income. Total funding grew from €4.9 million in 2008 to €7.2 million in 2014. Direct funding remains the most important source of income for ESE (59% of its annual budget came from direct funding in 2014), but revenues from national and international grants (NWO, ERC, NSF) are also increasing during the reporting period. In 2008 the research unit set up a special team to assist staff members during all stages of grant application. As a result, grant income quadrupled compared to the previous reporting period. According to the self-evaluation report, the yearly average of €2.5 million in grant income is not evenly distributed across the staff and across the research programmes; junior researchers have been more successful in their grant applications than senior staff and some programmes have benefited more than others. Income from contract research did not grow significantly during the reporting period. In the future, ESE aims to also increase the share of contract funding in its annual income. While the increase in funding is in many ways the key to ESE's international ambitions, the self-evaluation report also stresses that 'especially in times of austerity Erasmus School of Economics needs to make sure that plans to aim even higher remain realistic and it should take budgetary modesty into account'. A particular concern in this respect is the expected decline (for demographic reasons) in the currently high number of bachelor's students. ESE hopes to make up for this decrease by increasing the number of master's students.

3.2 Assessment of SEP criteria

Research quality

The ESE has generally conducted high quality research over the review period, as evidenced by various indicators, such as publications in high quality journals and citations.

The committee notes that the total number of publications has grown in proportion to the increase in number of tenured fte. On average, 44% of the article output was published in top (AIS≥80) journals, which is high. However, the quantitative material indicates that the average number of publications in top journals (AIS≥80) per tenured fte declined between 2008 and 2014. The total number of articles published in journals ranked in the 1st decile in terms of impact factor increased by only 1 from 2008 to 2014, while the total number of articles increased by 37.

The general CWTS bibliometric benchmark study (that does not distinguish between ESE and RSM) and the specific CWTS research performance analysis that was commissioned by ESE show that the articles published by researchers in (business and) economics at EUR have attracted fewer citations than those of most other institutions being reviewed, but they are still within the range of the European comparison set. EUR's mean normalised citation score (MNCS), as well as the proportion of publications belonging to the top 10% most highly cited papers (PP Top 10%), are lower than elsewhere. The studies show that EUR's articles are generally cited less than the typical article published in the journals in which its faculty members publish, which means that EUR does not enjoy the full benefits of publishing in high impact journals. One way of addressing the lower level of impact measured through citations would be to explicitly take citations into account in promotion and performance evaluation.

In its self-assessment document ESE stresses the use of total normalised citation score (TNCS) as a performance metric. TNCS is based on the total number of citations received by articles and is therefore heavily influenced by the number of publications and the size of the department. According to this metric ESE scores very well compared to other institutions being evaluated; the CWTS research performance analysis even shows that with respect to the volume of publications ESE ranks second (after Harvard University) in the group of 52 benchmark institutes. The committee attaches less weight to this metric, as ESE is one of the largest units being evaluated. Overall, the committee believes that there is room for improvement in ESE's research quality and it supports its stated aim in this regard.

The CWTS research performance analysis shows that the level of (international) research collaborations has grown: 'during the period 2008-2014, both the proportion of publications in inter-institutional collaboration and the international collaborative publications have increased'.

With regard to the organisational structure, the committee notes that at Erasmus University, both ESE and the Rotterdam School of Management (RSM) conduct research in a number of fields under the broad economics & business heading. As a result, both schools have staff members working in the same areas, such as finance and marketing. While they competed in the past for faculty members, the committee understands that they now use a more cooperative approach in recruiting. In addition, the two schools also organise joint seminars. The committee applauds this cooperation, but wonders if further integration would be even more beneficial.

The committee has noted that UvA and VU have recently introduced a joint business research masters in preparation for a PhD. Whereas in economics EUR collaborates with UvA and VU in a joint graduate school (TI), this is not the case in business. The question arises if it were advantageous for ERIM to seek collaboration with the Amsterdam schools in analogy with the Tinbergen Institute, or possibly by integrating it with the Tinbergen Institute.

Given that there is almost perfect overlap between the four departments and five research programmes, the committee is also not certain that there is still a need for research programmes. The committee suggests that ESE could consider removing the research programmes and organise the research via the departments.

Relevance to society

ESE reports to have a longstanding tradition of collaborating with non-academic partners, and has stepped up its efforts to enhance its visibility within society since the previous research review. It has formulated leading principles for selecting societally relevant projects (listed in the self-evaluation report) and mainly directs its efforts towards four types of valorisation: (1) co-creation of knowledge by involving third parties in research projects (logistics, finance, marketing), (2) contributing expertise in committees and boards, (3) informing public opinion, (4) (for-profit) knowledge transfer via companies in EUR Holding.

The committee notes that ESE has a limited number of policy instruments in place to enhance societal relevance. Yet, ESE presents several interesting cases of valorisation. There is increased attention to work with third parties, mainly companies, facilitated and encouraged by the school, but not enforced by ESE. This is primarily driven by good research opportunities (research questions, unique data), not money. In this respect ESE's work on logistics stands out as it contributes substantially to society (Port of Rotterdam, Railway time table).

ESE has ties to EUR Holding, which is dedicated to contract training, contract research and knowledge transfer based on knowledge created at EUR. Within EUR Holding, Erasmus Research & Business support B.V. is dedicated to the support of start-ups. However, linkages between ESE and EUR Holding are modest. ESE primarily benefits financially from its share in dividends of some EUR Holding companies. The committee agrees that separation between fundamental research and consultancy may be practical and realistic. When contract research is immediately relevant to the organisation that is paying for it, but lacks academic independence, it is in essence not that different from consulting work.

As part of its strategy to impact the world at large, ESE offers facilities, training and support for researchers to properly interact with the media. Contributing to committees and informing public opinion is restricted to a limited number of faculty members, some of whose public appearances mainly follow from their primary affiliation outside ESE

Finally, ESE considers its education activities as a key element of its strategy to create societal impact. ESE educates some 5500 students in total. According to the self-assessment report 'it provides the ability to influence the hearts and minds of hundreds of ordinary economists with state of the art insights'.

Viability

ESE has outlined a number of initiatives for the future. The first aim of the school is to improve research quality. This is primarily achieved by emphasising publications in the very top journals during performance evaluations. The committee supports such initiatives. However, aiming for top journals does require a faculty knowledgeable about what is required of a paper to be publishable in a top journal and of the process of publishing in such journals. Such faculty members are likely to be more senior and will have developed a network in the US, either through study (obtaining their PhDs from a US school) or US visits. This is the case because for many journals, the US is still the centre of editorial work, and having a US network generally leads one to be more connected to the journals and the way in which the journals wants articles to be structured to improve chances of publication. This is acknowledged in the report and international collaboration is therefore singled out as an important goal. Yet, the committee suggests that more could be done.

In the opinion of the committee, the almost exclusive focus on junior recruiting is problematic. As mentioned previously, much of this growth in faculty has come at the assistant professor level (from 44 fte's to 79 fte's) and the associate professor level (from 17 fte's to 30 fte's). The fact that most of the growth has come at the assistant professor level is the result of a deliberate strategy of hiring mainly untenured faculty and developing talent in house. If there is enough senior talent to mentor these faculty members, then such a policy is not per se problematic, but the paucity of growth in full professor numbers (2 fte's over 6 years) causes some concern. The committee would suggest more hiring at the associate and full professor levels to balance to influx of untenured faculty members. Of course, as further growth is not expected, the balance may be restored as junior faculty members are tenured and associate professors are promoted to full professors.

The criteria for promotion to associate professor appear to be clear and well understood by junior faculty members. The use of outside recommendation letters by experts in the candidate's field is also commendable. ESE has 'endowed professors,' which is a stage in between associate professor and full professor that is sometimes funded by outside organisations. They carry the 'professor' title and are allowed to supervise PhD dissertations, but are not quite at the full professor level. ESE considers these positions as particularly attractive since they typically come with less administrative burden.

The self-assessment report further indicates that few faculty members have a PhD from leading US schools. The committee believes that having part of the (senior) faculty trained in the top US institutions is helpful in terms of mentoring junior faculty, especially with regards to the publications process. The networks built while in the top US institutions remain important for many years after graduating. Hiring more senior faculty members with a US network would also be helpful. The committee realises that compensation may be an issue, but perhaps this can be partially rectified through lower teaching loads and increased research support.

ESE describes a strategy of intensifying both visits to and visitors from top US schools to benefit from access to US networks. The committee agrees with the plans to expand existing practices of inviting faculty members from top schools to spend time at ESE; these would be research visits of (possibly) several weeks, fully paid by ESE. As usual, the faculty member would interact with local faculty, discuss research with doctoral students, and perhaps do some PhD teaching. ESE already has good seminar series in many areas. Simply asking some of these visitors to stay for a little longer would be a good step in the right direction. In addition, it would be useful to send junior faculty members without an international network

to top schools to develop such networks. Of course, this requires some contacts with top schools, but this is where the network of senior faculty members and the research visits by top professors can help.

Hiring its own PhD candidates makes it difficult for any school to foster an international-quality research environment, yet 41 out of 163 PhD candidates over the period 2008-2014 were hired by Erasmus University (5 by RSM, 28 by ESE, and the remainder by other parts of Erasmus University, such as the Institute of Health Policy). While some or many of these may have moved on after an initial appointment, the committee recommends adopting a policy of not hiring one's own PhD candidates for faculty positions (this point will be discussed again in the PhD programmes section).

In terms of gender diversity, there is a reasonable balance in the lower ranks of the research unit, but in the higher ranks women are seriously underrepresented so that there is a lack of female role models. The leadership of ESE seems inclined to believe that this imbalance will be restored over time as the current assistant professors are promoted. The committee is less optimistic and would encourage ESE to establish more formal policies to improve the gender diversity of the senior faculty.

In terms of the SWOT analysis and the school's assessment of its past performance, the committee feels that ESE is somewhat complacent. While the paucity of faculty with a US PhD is a weakness, the committee believes that there are a number of good opportunities to do something about it. Similarly, the inability to place PhD candidates in the US can be addressed, as will be discussed in more detail in the PhD programmes section. There also seems to be a sense that the challenges in publishing in the very top journals are due to the fact that US institutions hold a grip on these journals. Yet over the last decades US journals have really opened up to researchers from abroad, and some of the most interesting empirical work has been cross-country work or work based on unique international data. Again, the committee believes that this is an opportunity for ESE.

In terms of finances, as discussed previously, ESE has been able to increase its grant income substantially over the review period, while contract research has remained stable (EU-funded research is included under the contract heading). While ESE notes as a threat that Dutch science policy does not sufficiently appreciate social science, the committee believes that the current funding structure is relatively healthy. Current student numbers are high – there are approximately 1100 first year bachelor students. Because of changing demographics, however, these numbers will likely decline in the future, which will have a substantial impact on ESE's direct funding. This will likely affect the ability of ESE to grow the faculty or increase resources for research supports.

PhD programmes

Over the review period ESE hosted an annual average of 67.4 PhD fte's and a total of 169 PhD theses were completed. ESE has chosen to prioritise the quality of the PhD thesis over the time it takes to complete it. Depending on prior education, PhD candidates are on a 3- or 4-year contract. 23% of the candidates from the 2006-2010 cohorts managed to complete their projects within four years, while after five years almost 60% of the candidates had graduated. Dropout rates are low. The self-evaluation report states that the average level of PhD candidates shows room for improvement and as part of its strategy for the future ESE aims to recruit only the best (international) doctoral students. It is also believed that the PhD programmes could and should be further aligned with the current research programmes.

All PhD candidates at ESE are registered at either Tinbergen Institute (TI) or Erasmus Research Institute of Management (ERIM). MPhil students take part in a training programme taught by senior members of these Graduate Schools. The training programme offered by the interuniversity Graduate School TI is discussed in a separate chapter in this report. ERIM is EUR's interfaculty (ESE/RSM) Graduate School for research in business and management. Its doctoral programme, offered to research master's students and PhD candidates, includes (advanced) methodology courses and field courses, as well as an annual Summer school. Depending on prior education, PhD candidates are expected to complete a course load of either 30 or 40 EC.

The committee notes that TI has long been established as one of the premier PhD programmes in the Netherlands and in Europe. ERIM, which was established in 1998, has less of a track record than TI. The committee, moreover, feels that the diversity in the backgrounds of PhD candidates makes it more difficult to make sure that all PhD candidates have a common knowledge base before starting their research.

Another concern is the fluctuating number of TI students who have conducted their doctoral studies at ESE over the period 2008-2012 (the last year for which the committee received data). The committee has been informed that both 2008 and 2012 were anomalous; in 2008 UvA and VU lowered their intake of Tinbergen students, leading to a high proportion of students appointed at ESE, while the 2012 intake was particularly low, having returned to 'normal' now. Even if that is the case, the numbers suggest that ESE's steady-state intake of TI students is small. Possibly related to this, the committee has learned that some of ESE's programmes seem to favour hiring graduates of their regular master's programmes over TI graduates. The committee has been assured of ESE's commitment to TI and apparently some measures have been taken to increase the intake of TI students in the ESE PhD programme. Given the trend noted above, it will be important to monitor the effectiveness of these measures in increasing the number of TI PhD candidates at ESE.

PhD candidates get the opportunity to spend time abroad and several of the PhD candidates that the committee spoke to have done so. In addition, funding is available for data and conference attendance. According to the self-evaluation report, ESE will extend possibilities for its PhD candidates to spend some months abroad in the near future.

A little more than half (52%) of the PhD candidates who graduated at EUR during the reporting period found employment in academia. As part of its strategic target of developing stronger ties with leading US schools, ESE intends to offer more support and training to alumni who wish to secure a tenure track at such schools. There appears to be a good system in place to help PhD candidates with entering the job market. There is a clear timetable in terms of what needs to be delivered and when. It is no surprise to the committee that not all PhD candidates want to go on the international job market, but it still feels that they should be encouraged as much as possible to do so.

As discussed previously, ESE hires a substantial fraction of its own graduates, notably in econometrics; 23% over the period 2008-2014 were hired by Erasmus University (17% by ESE and the remaining 6% by RSM and other departments). These percentages become even higher after excluding graduates who went to the private sector: 30% of those entering academia are hired by Erasmus University and 23% by ESE, possibly but certainly not exclusively in transitional positions. Rather than hiring one's own graduates, it would be better to hire them back after they have had a faculty or post-doc position at another school. The argument that in some areas ESE's work is so specialised that there are few other places

where graduates can be placed is a cause for concern as it suggests that those research areas are becoming less internationally relevant.

Research integrity policy

In terms of research integrity, the committee believes that ESE's policies are first rate. Over the reporting period, ESE was involved in a university-wide initiative to introduce a range of practices to increase attention for research integrity. The ensuing 'Taskforce Scientific Integrity', currently headed by a staff member of ESE, came up with a number of initiatives, such as a dilemma game focusing on professionalism and research integrity. Playing the dilemma game allows students to confront various ethical problems that may arise during their careers. In 2012, a new procedure for complaints regarding scientific integrity was introduced to enable early warning when staff encounters idiosyncratic research practices. For cases that require further review, a campus-wide Scientific Integrity Committee has been established, headed by a former public prosecutor and emeritus professor of criminal law. ESE also employs a confidential advisor on ethical issues whom students and faculty members can approach. The head of the Economics department currently takes up this last position. Newly hired staff members have to follow a 1-day course on research integrity.

ESE has also established a policy on data protection, lab use, and field experiments. The PhD candidates and faculty members that the committee interviewed are all aware of these policies.

3.3 Recommendations

ESE is the largest group being evaluated and one of the most visible within the Netherlands, but also internationally. Research is generally conducted at a high quality level, and given its size ESE produces more research than other groups. The committee has evaluated the quality and quantity of the research being conducted, the HR policies, organisational structure, viability, societal relevance, and PhD programme. The recommendations proposed in the various subsections of the report can be summarised as follows:

HR policies. Increase hiring at the associate and full professor levels to balance the influx of untenured faculty members. Although it may very well be true that endowed professorships are an attractive step in a career leading to a full professorship, their role probably merits a re-examination, if only to improve clarity about their function in academic careers. The committee also recommends to establish more formal policies to improve the gender diversity of the senior faculty.

Organisational structure. Consider whether the current structure of having ESE and RSM as separate schools within Erasmus University is the best way of achieving the highest quality of business and economics research and education at the University. Consider ways to streamline the organisation, for instance by removing the research programmes and organising the research via the departments.

Relation with Tinbergen Institute. There appears to be some misunderstanding among faculty about the credit given for teaching courses at Tinbergen Institute. Communicate clearly to all faculty members that courses in TI are given full credit on a par with other teaching obligations.

International networks. Consider expanding existing seminar and visitor programmes to a faculty wide formal visitors programme whereby faculty members from top schools spend time at ESE; these would be research visits of (possibly) several weeks, fully paid by ESE. The faculty

member would interact with local faculty, discuss research with doctoral students, and perhaps do a little PhD teaching.

PhD careers. Encourage and support doctoral students as much as possible to go on the international job market. Establish a formal policy of not hiring one's own PhD candidates – exceptions can be made for post-doctoral positions.

3.4 Scores

Quality	*Very good*
Societal Relevance	*Good*
Viability	*Very good*

4. Maastricht University, School of Business and Economics

4.1 Introduction

Organisation, leadership, strategy and targets

Maastricht University's (MU) School of Business and Economics (SBE) consists of seven departments and a number of institutes, including ROA (Research Centre for Education and the Labour Market) and UNU-MERIT (Maastricht Economics Research Institute on Innovation and Technology).

All research at SBE is conducted within the Graduate School of Business and Economics (GSBE). GSBE was created in 2012, when the former research school METEOR was awarded an NWO grant and began to function as a Graduate School. This was thought to strengthen its visibility and attractiveness to research master's students and PhD candidates. The associate dean of research and the scientific director, who heads the GSBE management team, are jointly responsible for research within SBE. GSBE has an advisory role in the development of SBE's research policy, oversees budgetary decisions and administers the SBE's research master's programmes and PhD programme.

The departments and institutes contribute to six research programmes:

1. Marketing and Supply Chain Management;
2. Accounting and Information Management;
3. Technology, Innovation and Industrial Dynamics;
4. Development and Utilisation of Human Resources;
5. Economic Theory, Behaviour and Computing;
6. Econometrics, Finance and Monetary Economics.

All programmes operate at the intersection of business and economics and integrate fundamental and applied research. Apart from interdisciplinary research within and across these programmes, GSBE also collaborates with other MU Faculties. Interdisciplinary research activities are seen as key to attracting more EU funding (notably Horizon 2020) in the future.

GSBE's mission is to generate and promote knowledge that advances economics and business sciences by:

- Performing high-quality business and economics research of international significance;
- Offering top-level research master's education;
- Training PhD candidates in research, presentation and language skills;
- Fostering a competitive, inspirational and fertile research environment;
- Establishing a stimulating research community in which people can share values and ideas;
- Knowledge valorisation and transferring research knowledge and skills for educational, societal and economic benefit.

Academic staff can join GSBE as 'members' or (if they meet the publication criteria) as 'fellows', but they are employed by either one of the departments of SBE, or one of its abovementioned institutes. A 6-year tenure track system has been in place since 2004. The

criteria for tenure vary across departments, but publishing in top tier outlets is a common denominator.

In 2009, SBE and GSBE developed a strategic plan entitled *BRIDGING GAPS: Strategic Programme for Research 2009-2013* (in short: BRIDGE). Following from this plan, SBE's main strategy for the reporting period was to upgrade its research mass (increase the output of peer-reviewed articles at a reward ratio of A:B:C=3:2:1, increase the number and quality of PhD theses, increase revenues from competitive funding, and accentuate its research focus). Other policies aimed to provide faculty members with research facilities, to enhance the structure of PhD programmes, to promote collaboration between the departments, and to strengthen SBE's international profile (e.g. by organising conferences, funding visiting professorship, offering extramural fellowships and increasing the ratio of international staff to 50% in 2013). Two-thirds of BRIDGE-resources went into hiring new research oriented faculty members; one-third was invested in improving research facilities and research support.

Provisional scientific targets for the upcoming reporting period include achieving an output that is dominated by A^+ and A publications without a decrease in quantity, increasing the number and quality of PhD theses, and increasing international visibility. With regard to societal relevance, GSBE aims to increase regional cooperation for the purpose of knowledge valorisation/-transfer, and to explicitly integrate societal relevance in the research strategy. To enhance viability, GSBE intends to redesign its organisation, to replace the current programmes with broader themes, to increase the participation of women, and to increase the share of competitive funding in the annual budget (to 10%).

Resources

The targets for the reporting period were to increase the academic staff as a whole, to increase the ratio of international staff (50% in 2013) and the ratio of female to male professors (25% in 2013). Contrary to these targets, staff numbers in all ranks but that of associate professor have decreased somewhat, notably at the end of the reporting period. From a peak of 165.8 fte in 2010 the number dropped to 135.4 fte in 2014. This was mostly due to budgetary problems and a hiring freeze in 2011-2012, but also had to do with the introduction of 3-year (instead of 4-year) PhD trajectories. In response to the underrepresentation of women in all academic levels at SBE – in 2015 just 9% of full professors was female – the faculty board has initiated the Service Science Factory project 'Women in Academia'. The resulting report (*Women in Academia*, 2015) concluded that 'many large and small changes must be implemented if UM wants to see an increase in the number of female professors'.

As a result of declining direct funding, SBE's total annual funding has decreased over the reporting period. Direct funding remains the most important source of income (with a share of 49.7% in the overall budget in 2014). It is allocated to SBE through a university-wide allocation model and onwards to the departments, Faculty Office and GSBE through a budget model based on the (1) quality-weighted sum of scientific publications, (2) the number of PhD defences and (3) the number of students. In SBE's annual budget, contract funding is a close second source of income (40.6% share in 2014). By contrast, revenues from national competitive funding agencies are modest (9.7% in 2014), but in line with the target for the reporting period (5%).

4.2 Assessment of SEP criteria

Research quality

MU's School of Business and Economics (SBE) is a large school covering a wide range of topics across the disciplines involved. For the 2008-2014 period it has reported the second largest number of publications (after EUR), together with the largest number of PhD defences. On an fte basis its performance appears more modest with a relatively low number of top (AIS≥80) journal publications per research fte. On average, 29% of the article output was published in top (AIS≥80) journals. In terms of PhD defences per research fte, SBE is at the top end of the universities participating in the review. On most other measures it is in the middle ground, but tends to obtain an above average number of citations in the journals it chooses to publish in.

Even though a university-wide financial crisis resulting in a recruitment freeze hampered it in the middle of the assessment period, SBE has still shown good productivity at a good level of quality. The CWTS benchmark study indicates that Maastricht University compares reasonably well with the selected peer group – as do the other Dutch universities. Maastricht is in the middle ground on the MNCS figure, but in terms of the very top level of publication quality it is at the lower end of Dutch universities. This confirms the need to work on improving the number of articles in journals of the very highest quality. The sub-units are of variable size, with some groups performing better than others in terms of both quantity and quality. SBE should concentrate on bringing other units up to the standard of the best. Nevertheless, the overall performance is very good.

The issue of achieving high quality across a wide range of research programmes and disciplines is one faced by all full range business and economics schools and this school is marked by the high level of inter-departmental and interdisciplinary work it has already achieved. It has also devoted a considerable effort to PhD education with a consequent rise in the number of PhD defences reported. However, SBE's research grant income represents a relatively low proportion of its total income and points to the need to continue to work to increase this, although it appears that research is also supported by the high amount of contract research undertaken. The balance between these sources of income needs to be kept under review.

Although presenting itself as a relatively new university, MU appears to have adopted traditional and somewhat bureaucratic structures. There seems to be more complexity than is necessary to achieve the strategic goals, and these goals could be more fully developed into more concrete plans. It may be that a more flexible and proactive approach that focuses on the key targets that need to be achieved would yield some of the desired benefits. Criteria for promotion to full professor are not explicit and there is confusion as to whether promotion is based only on merit, or also depends on the availability of a chair. These chairs are often 'endowed chairs', which require outside funding and in contrast to the Anglo Saxon model are typically of limited duration and modest funding levels. The unit has pointed to the disadvantages of its location, but would do well to capitalise more on the benefits of this, in addition to the praiseworthy amount of regionally relevant work it already undertakes. Indeed, the inability to pay competitive international salaries recognised as an important issue across all Dutch universities might be somewhat compensated for by its locational advantages at the crossroads of Europe.

Relevance to society

SBE sees societal relevance as a 'sine qua non' of its research. The SWOT analysis identifies increasing the transfer of research knowledge to society at large as an opportunity. In 2011, SBE established a new Business Development and Knowledge Transfer (BDKT) staff department, which will assist research staff in their efforts to interact with society at large.

Within SBE, the ROA and UNU-MERIT institutes play a key role in developing research products for special target groups, notably (policy) reports. Both institutes are described in the self-evaluation report as having 'a long tradition of research with an applied emphasis and a strong impact on policy debates'. Indeed, the committee recognises that ROA and UNU-MERIT represent longstanding lines of applied research at Maastricht University. ROA reports are considerably relevant for policy and ROA researchers excel in combining applied and fundamental research. UNU-MERIT aims to combine two lines of research, innovation and governance, that have some elements in common but do not directly seem to yield much synergy. The committee notes that the policy relevance of the innovation line of research has fallen since the heydays of MERIT in the previous century. The governance and development work of UNU-MERIT, however, has a societal relevance that extends well outside the Dutch borders.

Inclusion of ROA and UNU-MERIT into SBE explains the high share of contract research in its funding and the substantial number of societally relevant publications. This differs from some other schools where applied research units are separated from the research schools, causing an apparent difference in the balance of funding.

The quality and impact of SBE's societally relevant research is very good. The committee notes that interaction with societal and corporate stakeholders mostly takes place at the regional level (Service Science Factory, Limburg Knowledge Axis, Smart Services Campus). Research of SBE supports the local economy in Limburg. SBE prevents its activities from turning into pure consultancy by stressing the importance of publishing research outcomes and by having people work both in the research school and on projects relevant for local stakeholders. SBE is careful not to use direct funding for these activities, so as not to distort the market.

The committee assesses SBE's valorisation efforts as outstanding. It noted that GSBE fellows were responsible for the (award-winning) Global Real Estate Sustainability Benchmark, which is used by over 130 institutional investors and property companies. The underlying research was published in a top-level economics journal. Another strong case that was brought to the committee's attention is that staff members of the Accounting and Information Management programme often conduct research relevant for companies because it allows them access to unique data and offers opportunities to perform natural experiments. In this case, financial interests were clearly subsidiary to the research opportunities that follow from investing in relationships with companies. Together with the third case of research by ROA (see above), SBE demonstrates strong synergy between research relevant for society and high quality fundamental research.

In the SWOT analysis SBE identifies the divide between fundamental and applied research – resulting from the emphasis placed on societal relevance by government and funding organisations – as a threat. The examples above, however, convince the committee that SBE is quite well equipped to link these two types of research. During the site visit, the threat mainly appeared to relate to the Business Intelligence and Smart Service centre (BISS) initiative. SBE stated it had to convince both companies that were sceptical of the relevance

of the work done for them and researchers that were reluctant to perform research within this centre. According to the committee, one option is that BISS related research is primarily contract work that yields funding. In that case outsourcing it to a purely applied research centre is a feasible option. Or, if synergies with fundamental research do exist, SBE could consider using the impressive valorisation cases above as best practices to coach researchers in strengthening the link between applied and fundamental research.

Viability

SBE's SWOT analysis covers many of the relevant issues, and the committee is therefore confident that the unit has a clear view of the issues that must be resolved in order to enhance its future viability. The committee is aware that effective corrective action has already been taken with respect to one major threat, concerning the lack of student interest in the research master's programme in Business. The unit is furthermore considering to change its organisational design, which is currently described as a weakness. The committee endorses the usefulness of such an undertaking, as the current structure seems overly complicated with too many interacting managerial layers. Streamlining and simplification of the research management structure should also help to improve external and internal communication. The overarching need for MU (and several other universities participating in this review) however, is to seek out additional sources of funding and to apply these to improving the amount of top quality research produced.

The committee agrees that the SWOT analysis already performed now needs to be carried forward by the development of a more fully articulated strategy. This should be designed to achieve the laudable aims already specified, perhaps starting with the definition of more specific targets and the identification of the means by which they might be attained.

The unit has shown its ability to be resilient in the face of financial problems and has produced creditable results despite this issue, which is now in the past. Its position is sound for the short-term but perhaps needs to be more externally focused to achieve its objectives in the medium term, particularly in enhancing its external reputation. This might be facilitated by better using the talent it already has access to.

In terms of the slow progress in improving the gender balance of its staff, especially at the senior levels, little detail has been given to the committee about the tools it might deploy to make such improvements. A distinctly positive development is the *Women in Academia*-report, which now needs translating into practical actions designed to achieve the commendable objectives outlined. In addition, the committee stresses that attention needs to be paid to increasing other types of diversity, such as national origin, in staff at senior levels.

PhD programme

Over the review period, GSBE has yearly offered 22 directly funded 3- or 4-year PhD positions, depending on previous education, and hosted an annual average of 79.6 PhD fte's (internal and external candidates combined). A total of 196 PhD theses were completed. The male-female ratio amongst the 2006-2010 cohorts of PhD candidates is 60-40%. Up to a third of the PhD candidates are non-European.

Improving the number and quality of PhD theses is mentioned in the self-evaluation report as a strategic priority for both the reporting period and the coming period. The annual average of 28 theses per year (which is still higher than in the other participating research units) is currently lower than the target figure formulated in the BRIDGE strategy document (40

theses in 2013, later adjusted to 35 theses per year). Low student numbers in the business track of the research master's programme are described as problematic in this respect. Only GSBE fellows can submit candidates for the PhD pool. The management team subsequently reviews applications and GRE tests, and interviews are used as selection tools.

Lead times could be improved: 17% of the candidates from the 2006-2010 cohorts managed to complete their projects within four years, while after five years almost 51% of the candidates had graduated. The latter percentage will increase further as more PhD candidates from the 2010 cohort are expected to complete their thesis in 2015 – although Table 4 shows that the 2007-8 cohorts have performed better in this respect than the 2009-10 cohorts. In addition almost 10% of the 2006-2010 cohorts discontinued their projects.

A supervisory team of at least two staff members, who regularly meet with the PhD candidate to discuss progress, carries out the supervision of PhD candidates. One of the members is responsible for daily supervision. Before or at the start of the project, the supervisory team and PhD candidate complete a training and supervision plan. Progress is evaluated annually and a negative evaluation can lead to termination of the project. After 10 months there is a go/no-go decision. GSBE has also adopted a monitoring system ('PhD TRACK'). Teaching duties such as tutoring are part of the appointment of internal PhD candidates (amounting to a maximum of 20% of their time) and PhD training consists of coursework.

Additional facilities provided to PhD candidates include access to a confidential adviser, career coaching, and doctoral colloquia.

Roughly 60-65% of PhD graduates pursue an academic career. The Board of the Graduate School informed the committee that all candidates are expected to write single-authored papers in order to improve their chances on the labour market. These do not necessarily have to have been published at the time of graduation. The PhD candidates that the committee spoke to, however, indicated that in their opinion the specific requirements for applying to the international Job Market could have been made clear earlier on in the PhD trajectory. Although the policy is not to hire GSBE graduates, unless in postdoc positions, the committee notes that 10% of recent graduates have obtained assistant professorships at GSBE or became researchers at ROA or UNU-MERIT.

The committee considers the PhD programme, which includes a large number of enthusiastic and capable students, as one of the impressive strengths of SBE. However, practices do seem to be relatively informal in places and to vary across subject areas (for example, on preparation for the job market), which can lead to some students not receiving the guidance required. In particular, it appears that only GSBE Fellows can submit candidates for the PhD pool which seems to be unnecessarily restrictive. Benefit could be gained from ensuring that the good practices that have been codified in some areas are codified and consistently followed across all areas. The low number of students following the business research track on the research master's programme is a threat which needs to be addressed. The committee was pleased to learn that steps have been taken to do so.

Research integrity policy

Maastricht University follows the Netherlands Code of Conduct for Academic Practice (VSNU, 2004). With regard to data management, MU implemented the Research Data Management Code of Conduct (2014), which provides guidelines for the ownership, storage and sharing of research data. GSBE is currently designing and implementing a policy in line with this university-wide code of conduct.

The committee concludes that a start has been made with implementing appropriate procedures to deal with these issues, but more needs to be done. The area of research data management has started down the track but faster progress is required on implementation. Discussion with other schools concerning their practices, and building upon what has already been implemented elsewhere, may help speed this up.

4.3 Recommendations

Although SBE was affected by a university-wide financial crisis during the reporting period, it has still shown good productivity at a very good level of quality. The committee was also impressed by outstanding examples of valorisation and very good contributions to the local economy. While SBE has recovered well from its financial troubles and is currently viable, it would do well to continue to develop a sound strategy for the future, and to ensure that it is implemented by adopting appropriate organisational structures and setting relevant measures and targets.

In general, SBE appears to have outlined its general strategic intent but still requires translating this into action in a more robust manner. It should build upon the strengths that it has already developed by ensuring that its work is disseminated in the highest quality outlets. More specifically, the committee would suggest that it pays particular attention to the following areas:

Societal relevance. The unit has a strong presence in societal relevant research. The committee supports the expressed goal to better integrate basic research, applied/contract research and teaching at the undergraduate, graduate and executive level, as well as better knowledge dissemination. To achieve these goals will require specific measures and targets being agreed upon and implemented.

Research quality. Continuing attention needs to be paid to improving research quality in terms of the journals targeted by researchers.

Promotion criteria. The criteria for promotion to full professor should be developed along the lines of those in place for associate professors; promotion to full professor should be solely based on merit and independent of the availability of outside resources for the funding of an 'endowed chair'.

Organisational structure. The unit is considering organisational changes, such as replacing the current research programmes with broader research themes. The committee supports a critical evaluation of the current structure, which seems overly complicated with too many interacting managerial layers. Streamlining and simplification of the research management structure should be possible, for instance by having research programmes coincide with departments.

Research integrity policy. The implementation of the research integrity policy should be accelerated.

Diversity. Issues of diversity (including, but not restricted to issues of gender balance) should continue to be progressed by ensuring policies are translated into practical programmes of action.

4.4 Scores

Quality	*Very good*
Relevance to society	*Very good*
Viability	*Very good*

5. University of Groningen, Research Institute of the Faculty of Economics and Business (SOM)

5.1 Introduction

Organisation, leadership, strategy and targets

Economics and business research at the Faculty of Economics and Business (FEB) of the University of Groningen (RUG) takes place within the Research Institute of the Faculty of Economics and Business (SOM). SOM has three inter-related units: (1) a Research Institute with six underlying research programmes, (2) a Graduate School, and (3) SOM Applied Research (SOM AR). The Research Institute is made up of six research programmes in economics and business:

1. Economics, Econometrics & Finance (EEF);
2. Global Economics & Management (GEM);
3. Human Resource Management & Organisational Behaviour (HRM&OB);
4. Innovation & Organisation (I&O, this programme is the result of the merger of three previous programmes in 2010);
5. Marketing;
6. Operations Management & Operations Research (OPERA).

In 2010, SOM Applied Research was created with the aim to strengthen the link between science and practice, by enhancing the valorisation and societal relevance of SOM's scientific research. SOM AR supports a number of Centres of Expertise, organisational units that engage with societal stakeholders on a specific topic, linked to one or more of the research programmes.

The Faculty Board has ultimate responsibility for the management of FEB. This Board appoints the SOM Board, which takes most of the decisions concerning research and graduate affairs, as well as the SOM scientific director, the director of Graduate Studies and the directors of the six research programmes. The SOM Advisory Board gives general policy advice

In addition to the Faculty-wide mission to provide top-quality education, conduct high-quality research and interact with local and global societal partners, SOM has a two-fold research mission:

- To be a leading, full-range research school covering Economics and Business and to meet the needs of the academic community and students as well as society by conducting and stimulating excellent fundamental and applied research related to the firm in its economic environment;
- To recruit and train talented students both at the Research Master and the PhD level and to provide them with high-level programs, excellent supervision and a stimulating, international research environment.

Overall, the key objectives of SOM during the reporting period were to further strengthen the FEB research programmes and to ensure their long-run viability; to improve upon the quality of research and resulting scientific output; and to enhance visibility, impact and societal relevance of its research efforts. Attracting and retaining high-quality staff is identified as one of the key success factors for achieving this mission and therefore a 6-year tenure-track

system was implemented in 2008. To attract new staff and full professors for the most competitive disciplines, FEB has recently engaged a headhunter agency. Typically SOM hires at the assistant and full professor's level, not at the level of associate professors. Its hiring strategy reportedly gives special attention to gender diversity and internationalism. Increasing the income derived from external funding sources is another key factor in realising the research mission. Research grant earning capacity is therefore one of the evaluation criteria for tenure-trackers. Tenured staff members at SOM have an average of 50% (and a maximum of 60%) research time. Teaching duties amount to at least 20-25% of the appointment, also for full professors (as the unit stresses the importance of full professors being involved in teaching).

SOM's ambition is to further improve its international visibility and the reputation of its research, more explicitly: to become one of Europe's top-10 research schools in economics and business. The research unit hopes to accomplish this by focusing even more on top publication outlets, aiming for a yearly 10% increase of top publications. To achieve this objective, SOM considers further developing its incentive system for rewarding research performance by increasing credits for top publications and by introducing a 'star fellow' status. Additionally, the research unit aims to increase the number of editorships of high quality journals, and to improve the number of PhD defences (average per year >30) and completion times (average <4 years full time). Special efforts will be made to recruit sufficient talent for the business programme. Lastly, SOM hopes to engage in international consortia building in order to attract EU and ERC funding for large-scale projects.

The self-evaluation report states that recent years show the increasing importance of theme-based research, which benefits from multidisciplinary research insights. In response to this development, SOM is in the process of identifying a limited number of 'signature areas' that will cut across programme boundaries and are expected to offer new research opportunities. These signature areas will receive seed money (€200,000-250,000 per signature area) and publicity. SOM also contributes to RUG's three societal themes: (1) healthy aging, (2) energy, and (3) sustainable society, which ensures additional funding from the university level.

Resources

SOM's research staff has grown over the reporting period, from 142.2 fte in 2008 to 155.6 fte in 2014, with assistant professorships increasing from 10.5 fte in 2008 to 27.2 fte in 2014. The average age of the staff is now lower than during the previous evaluation, but especially in the higher ranks, an imbalance between male/female and Dutch/non-Dutch staff members remains. In 2016, two female staff members who previously held tenure-track positions from the university-wide Rosalind Franklin Fellowship Programme will become full professors.

The increase of SOM's research staff was made possible by an increase in student numbers, and therefore a growing research budget. Direct funding is by far the largest source of income and even increased over the reporting period. In 2008, almost 70% of the research staff (equal to 82.7 fte) was paid out of direct university funding; in 2014 this had increased to 73.5% (equal to 104 fte). As a rule, 40% of FEB's direct funding budget is allocated to research. Compared to the previous reporting period, when external funding amounted to 15-20% of SOM's research budget, the combined share of first and second stream funding has increased in the 2008-2014 period to 20-25%. A closer look at external funding shows that income from research grants has gradually increased while revenues from contract funding have slightly decreased. At the beginning of the period, in 2008, 8.1% (9.6 fte) of research fte's were paid out of research grants, while 25.9% (25.9 fte) were funded by contract research. At the end of the period, in 2014, 10.7% (15.1 fte) of research fte's were paid out of

research grants, while 12.6% (17.9 fte) were funded by contract research. According to the self-evaluation report, the 'substantial' support system for acquiring external funding that is in place at SOM has facilitated this increase in NWO funding and externally financed PhD projects.

5.2 Assessment of SEP criteria

Research quality

The quality and scientific relevance of SOM's research is very good, and, although not a full service business school (e.g., it does not currently offer an MBA programme), it has greater breadth than some other units in this assessment, befitting a full range business school. In particular, the unit's dual strength in the value chain of operations and marketing is likely to enhance SOM's attractiveness to industry and commerce.

While the total number of academic publications has decreased over the review period, mostly as a result of a decreasing number of non-refereed articles, the total number of refereed journal articles in fact increased. When corrected for the simultaneous increase in staff fte's, the productivity of refereed journal articles, including articles that appeared in top journals (AIS≥80), was rather stable throughout the review period. The number of PhD defences per research fte also remained constant. SOM produced a substantial number of books and book chapters.

The committee finds that SOM's goals and quality strategy are clearly stated and defended by a team with a shared vision. SOM's research strategy for the reporting period was to strengthen the top-level output, leading to enhanced international visibility and recognition in the academic world. On average, 37% of the article output was published in top (AIS≥80) journals. The CWTS bibliometric benchmark study shows that in terms of its mean normalised citation score (MNCS) SOM outperformed most of the European benchmark institutes, also leaving behind TiU, EUR, UvA and MU. In terms of the PP (top 10%), or proportion of articles belonging to the top 10% most highly cited, SOM is in the middle group of Dutch universities and ahead of most of the European peer institutes.

The unit's well-executed strategy is reflected in its HR policies. SOM has successfully recruited on the international labour market, providing fresh leadership for its junior professors and rejuvenating its staff and research culture. SOM's current use of head-hunters to help with senior appointments aligns the unit with the practice in leading international business schools. While SOM's senior researchers are dominantly 'Dutch males', it does have explicit strategies and policies to increase diversity for both gender and nationality. In this respect the committee points to the (modest) success of the university-wide Rosalind Franklin programme. The committee also notes that SOM has increased the number of postdoc researchers from 6 to 16 over the review period, a development that is consistent with the profile of leading international research areas. The unit has developed endowed chairs sponsored by industry or corporate organisations, although the 'endowment' of these chairs is not the funding in perpetuity that occurs in top Anglo Saxon universities (cf. General Remarks-chapter).

The committee also notes a very good organisational structure. The 'signature areas' designed to provide a multidisciplinary strength to SOM's functional research programmes are developed carefully and professionally and are now backed by additional research time and budget (e.g. PhD positions, visitors).

The Faculty's acquisition of AACSB and EQUIS accreditation during the assessment period is a credit to its leadership and is likely to provide long-term benefits in developing international links, learning best practices and the internationalisation of the school. One benefit that already shows are the clear 'learning goals and objectives of SOM's research master's and PhD programmes'.

SOM's income from research grants has somewhat increased over the review period, both in absolute numbers and in the share in the total budget. The committee concludes, however, that its pursuit of the highest uniform level of research excellence, resources and productivity is limited by the national resourcing system that constrains revenue generation and remuneration (cf. General Remarks chapter). SOM, and other business schools in the Netherlands, are constrained when competing with state funded European Universities who have successfully followed the US model of endowment income from multinational corporations, alumni and wealthy benefactors. A corollary of the neglect of endowment income is underdeveloped alumni relations, an area that can help greatly in the relevance and governance of research. The first schools in the Netherlands who escape the national funding trap by following the internationally well-established processes of independent fund raising are likely to put space between themselves and late movers. SOM's excellent and relevant research put them in a strong position to lead the pack in such an initiative.

Relevance to society

An exceptional feature of SOM's high quality academic output is its societal relevance. Rather than relevance detracting from excellent academic research, SOM shows that the two can grow together. There is evidence of a high level of interaction with societal stakeholders beyond academia, with examples of media exposure and public engagement. The self-evaluation report provides hard indicators of involvement. For example, a quarter of SOM's researchers are involved as members of corporate boards, and several chairs are sponsored by industry. The cases reported in the self-assessment document describe high-level impact across a range of sectors, and from this it appears that social impact and valorisation are at a relatively mature stage of development. Over the reporting period the unit has substantially increased its funding by industry and corporate organisations. SOM, for example, has a prominent place in research commissioned by the Logistics Top Sector via NWO. Its impact seems very good, although it does not appear to systematically measure this other than in WOTRO's excellent work in developing countries. Moreover, SOM manages several data sets (EUKLEMS, WIOD, PWT, GGDC growth accounting data) that are widely used, not only in academic research but also by applied research institutes and government. SOM succeeds in developing these data sets and keeping them up-to-date. This provides a valuable service to the research community and practitioners.

The committee notes that SOM has clear policies and structures to enhance societal relevance. These are well integrated in the unit's operation to go beyond being policy measures. For example, Centres of Expertise are established under an applied research unit specifically to enhance societal impact and valorisation. The activities of these centres involve contract research, corporate and government networks, policy publications, research informing practice, etc. The self-evaluation report does not mention an explicit strategy or policy with regard to interaction with the general public. Many outreach initiatives seem rather bottom-up. SOM reportedly does provide support to research staff who would like to disseminate research results to the general public through public lectures and the media. During the review period, SOM did not officially register its staff members' activities with regard to knowledge transfer and valorisation. As of 2015 this has changed with the introduction of PURE.

Viability

The committee finds that SOM appears viable and robust, with a sound strategy for its future development. The exceptionally good management of SOM enhances its ability to continue its successful development. The democratically agreed signature areas are a creative way of cutting across the long established research areas and addressing the increased need for interdisciplinary research. Equally encouraging are SOM's ability to recruit senior academics, and RUG's established gender diversity programme. Considerably less attractive is RUG's late move into the China market. This may be an innovative move in the Netherlands but Anglo-Saxon business schools have been operating in the region for decades and rarely make a financial or academic return. FEB's new EQUIS accreditation could provide a useful insight into the risks and returns from such adventures.

Also worth mentioning are SOM's excellent facilities. In 2010 a laboratory for experimental research and teaching was completed. Lab assistants are a necessary part of an institute committed to psychological, social and organisational research, and this resource may allow SOM to attract researchers who need such facilities. FEB's physical and digital library, the annual investment of €250,000 in external databases, the PURE system to register and evaluate research and SOM Applied Research (SOM AR) that serves as a support office for the Centres of Expertise also impressed the committee. These commitments are well chosen and help with the quality and relevance of SOM's research.

But, since SOM is mainly drawing on a nationally defined pot based on student numbers, its resources are constrained to below the level achieved by international business schools that have freedom over the pricing of their programmes and/or an established endowment income stream. SOM has an excellent ability to retain and attract top senior and junior staff but – like elsewhere – the rigid pay scales and dependence on direct funding are clear constraints. Growing student numbers have furthermore increased the teaching burden on staff, as became clear from the committee's conversation with staff members. SOM's research grants and 'other' income have edged up but research contracts are down. This leaves SOM mostly dependent upon direct funding with pricing and volume decisions made remotely. However competent, an organisation so dependent upon remote decision makers is vulnerable.

Finally, the committee notes that the SWOT-analysis is convincing but has still to be worked up into a clear strategy for the future.

PhD programme

Currently, SOM offers 3- and 4-year PhD tracks (depending on previous education), as well as a 6-year part-time 'external' track aiming at professionals who wish to pursue a PhD degree in combination with their employment elsewhere. All PhD candidates are treated similarly and, under the new system, are all expected to reach the same standards in terms of dissertation quality. Strengthening the international status of the graduate programme is listed as a strategic objective in the self-evaluation. In 2012, SOM started a directly funded 3-year PhD track to which it admits roughly 12 candidates per year. A research master's degree is mandatory for those who wish to enrol. In 2014, an assessment was added to the selection procedure for these candidates.

Over the review period, SOM has hosted an annual average of 84.7 PhD fte's (internal and external candidates combined). The annual intake of directly funded PhD candidates is rather constant, while the admission of externally funded candidates has varied. In the future, SOM aims to increase the number of externally funded candidates. Between 2008 and 2014, 176

PhD theses were completed, which implies an annual average of 25 theses. During the peak years of the reporting period (i.e. 2011-2012), SOM reached (and exceeded) its target figure of 30 defences per year (31 and 33 defences, respectively). Also, SOM aims to shorten completion times (<4 years full time) while maintaining quality. At the moment, most candidates take longer than 5 years to complete their projects and dropout rates are high. It is thought that the new 3-year PhD trajectory will remedy this situation. As a further tool to promote successful completion, SOM has developed an assessment for those who enter the programme. The outcome of this assessment is discussed with the candidate and – if he/she gives permission – also with the supervisor.

The training programme that PhD candidates have to complete depends on their prior education. PhD candidates with a research master's degree, who follow the 3-year SOM-funded programme, complete a course load of only 5 EC, while NWO- or industry-funded candidates in the 4-year programme have to complete a coarse load of 45 EC, consisting of a compulsory common part of 15 EC and 30 EC of elective courses. Participants in the part-time PhD programme that started in 2013 have to take six courses in the first two years of their PhD trajectory and pay a tuition fee of €15,000 for this course-based phase (€25,000 for the full programme).

Internal PhD candidates have teaching obligations that amount to 15% of their appointment. The PhD candidates that the committee spoke to confirmed that they feel adequately prepared for these teaching duties. A didactics course is optional.

Internal PhD candidates receive an annual travel budget of €1800, which allows them to attend one to two conferences.

As of 2013/14, all PhD candidates are supervised by at least two supervisors. The supervision team consists of at least one SOM fellow. Within one month after the start of a PhD project, the PhD candidate and his/her supervisors and PhD coordinator draw up a Training and Supervision Plan (TSP). The director of Graduate Studies has to approve this plan. Six months after the start of the project, the candidate's progress is first evaluated and after 12-14 months there is a second evaluation, which results in a 'go/no go' decision. From the second year there are annual evaluations in the form of a monitoring interview, which involves the PhD coordinator, the director of the research programme and the PhD candidate.

Almost 60% of all PhD graduates pursue a career in academia, while the part-time PhDs typically do not continue in academia. PhD candidates in their final year are invited to take part in a university-wide course on career perspectives for PhDs. In 2014, an event on career development outside of academia was first organised. PhD candidates in economics (but not those in business) are usually stimulated to produce one single-authored publication, with which they enter the Job Market. Still, the role of the supervisor is instrumental in preparing the student for the Job Market through support letters, practice presentations, and doing mock interviews. However, this is performed on an ad-hoc basis and is not institutionalised. Roughly 20% of graduates (initially) remained at SOM, as (postdoc) researchers or in tenure-track positions. The committee was told that this is not the 'preferred policy', but that hiring one's own graduates is a solution for positions that otherwise would be hard to fill.

The committee notes a number of strengths of the PhD programme, mainly with regard to the rigorous admission procedures. Like elsewhere, there is a clear benefit for all concerned in linking the large research master's that combines economics and business to the PhD programme to shorten the total time for PhD completion. Recent improvements include the

addition of a second supervisor and the use of an assessment during the admission procedure. The committee is pleased with the cooperation between SOM and the university-wide Talent and Careers Centre (TCC), which has benefits that are clearly understood by PhD candidates. PhD supervision appears excellent and is particularly notable in producing part-time PhD graduates of the same standard as full timers.

There are also some weaknesses. It was already mentioned that career guidance provided to graduates is rather ad hoc, as the system appears to depend upon the good will and contacts of supervisors. While this system recognises the diversity within the PhD population and disciplines, it also leaves SOM's graduates at a disadvantage compared with those of units who do professionalise the process. Similarly, the encouragement and systems to support PhD candidates to spend research time in other international business school is modest. This could be particularly damaging for SOM, as a substantial part of its PhD candidates is from the Groningen area and may spend the whole of their academic career at their local university. These deficiencies are relatively easy to fix but are critical because the destination of a schools research graduates is a critical metric for top schools. Thus, the PhD programme's otherwise excellence is somewhat damaged by its inattention to encouraging researchers to broaden their international experience and ad hoc approach to career development. However, these are weaknesses that can easily be solved.

Research integrity policy

In line with the VSNU Code of Conduct, RUG has formulated its own regulations for the protection of academic integrity. These regulations, for example, stipulate that newly appointed researchers are asked to declare that they are familiar with the Code and will obey it. Questions and complaints can be discussed with a confidential advisor. At the end of 2014, an Ethics Committee for Research was established at FEB. A recent development is the formation of an FEB Ethics Committee for Research (December 2014) that examines individual proposals and paper as well as advising the Faculty Board and SOM management on new developments in research integrity. The protocol that was recently completed by this committee is currently reviewed by the Faculty Board. At RUG's stimulation, the SOM Research Data Management Policy will be implemented in January 2015. According to this policy, all data should be accurate, complete and reliable, and should be stored for at least 10 years.

The committee notes that SOM is aware of the dangers of the pressure to publish at the highest level and has implemented strategies to help. Valuable developments of the research master's and PhD programme are the recent requirement that all students follow the eight modules of the Collaborative Institutional Training Initiative (CITI Programme) with its comprehensive coverage of research ethics and data management issues, and the inclusion of a comment on ethical issues in all PhDs (September 2015), which is highly commendable. There are other indicators of SOM's commitment to research integrity. Besides complying with the Netherlands Code of Conduct for Scientific Practice, scientific integrity is part of researchers annual Results and Development interview. RUG also has five confidential advisors who researchers can approach concerning research integrity issues.

The committee notes that the abovementioned recent initiatives make the integrity policies and processes of SOM very strong but they are too recent to show how the new, high levels of formal research integrity are imbedded in SOM's research culture.

5.3 Recommendations

SOM continues to develop strong, well-managed programmes in business and economics. A particular strength is its ability to blend high quality research in many areas with societal relevance that manifests itself in many ways. This is the result of a strategic vision and professionalism that imbues the organisation.

The school is creative in overcoming the constraints imposed by the traditions and finances of the Dutch higher education system. It has innovative strategies and policies to recruit new blood at senior levels and to implant equal opportunities. Its recently achieved international accreditations provide an excellent opportunity for SOM to work with international partners to learn, develop and embrace best practices that will further enhance its standing.

The committee makes the following recommendations:

Building alumni relations. Learn from AACSB and EQUIS how SOM can take advantage of its excellent corporate links and local involvement to build and alumni and advancement operation. In the long term, this has the potential to create an independent income stream that will allow SOM to achieve an even higher level of research excellence. Rather than looking to the US schools as exemplars, SOM may refer to business schools in Canada and the UK who were late to this activity. Similarly, use the AACSB and EQUIS networks to examine the opportunities and threats of China initiatives.

PhD programme. Implement practices and programmes that encourage PhD candidates to spend some time outside the Netherlands during their programme. If implemented, the previous recommendation is a likely source of funds for the travel scholarships that may be needed. The committee also recommends formalising the career help provided for PhD students.

Recruiting. The unit has a stated policy of not hiring own PhD graduates. It turns out that in practice this policy is not adhered to consistently. The committee recommends to implement the policy consistently and strictly.

External relations. There may be a tendency to be somewhat inward looking, including a substantial share of students coming from the region. It is important therefore to invest in an ambitious programme for bringing in visitors who can interact with faculty members and PhD students and possibly do some teaching. Similarly, a formal sabbatical programme that would facilitate visits by faculty members to research institutes elsewhere is worth considering.

5.4 Scores

Quality	*Very good*
Relevance to society	*Excellent*
Viability	*Very good*

6. Utrecht University School of Economics / Tjalling C. Koopmans Research Institute

6.1 Introduction

Organisation, leadership, strategy and targets

Utrecht University School of Economics (U.S.E.) is one of the three constituting departments of the Faculty of Law, Economics, and Governance (LEG) of Utrecht University (UU). U.S.E.'s research takes place within the Tjalling C. Koopmans Research Institute (TKI), which is responsible for one comprehensive research programme: Multidisciplinary Economics. This programme was created during the reporting period, in 2012, as a result of recommendations by the midterm review committee. It consists of three research lines: Business Strategy and Governance (BSG), Sustainability and Globalisation (SG), and Institutions and Welfare (IW).

A 'real world perspective' and a strong focus on core-values such as well-being, cooperation, innovation and curiosity reportedly lie at the core of the 'rebranded' research programme Multidisciplinary Economics. Not only does the programme aim to cross borders within the economics discipline, it also hopes to stimulate cooperation with other academic disciplines. As such it is thought to make a valuable contribution to Utrecht University's four Strategic Themes: Institutions for Open Societies, Life Sciences, Dynamics of Youth and Sustainability. Involvement in these UU themes, especially in Institutions for Open Societies, brings in extra funding from the University and Faculty level and U.S.E. actively encourages participation by financial matching.

The dean of LEG is formally responsible for the research within the Faculty. This responsibility is delegated to the head of the Economics Department, who is assisted by the U.S.E. Board. The director of the TKI is a member of this Board and responsible for the general research strategy.

The research strategy that U.S.E. has developed in 2013 is threefold and aims at (1) a clear multidisciplinary profile, (2) high quality research and (3) a high societal impact. The strategic instruments to realise these objectives are laid down in the Strategic Plan of the LEG Faculty (2013-2016). To support its multidisciplinary profile, the first objective, U.S.E. adopts a strategic personnel policy and publication standard.

High quality research, the second objective, is reportedly stimulated by talent development: staff members are encouraged to attend conferences and engage in training programmes, they are assessed annually on their performance, and well-performing staff are awarded the TKI fellowship, which means that they can spend 40% of their appointment on research and have access to the TKI travel fund. U.S.E.'s research assessment system ('RAAS') specifies the criteria that staff members have to meet in order to qualify for TKI fellowship. In 2014, the publication requirements for TKI fellowship were 50 RAAS points with a minimum of 30 points for journal articles. U.S.E. uses the ISI journal list to give out credits for journal publications. As of 2012 a tenure-track policy is in place, and the unit is considering a move from a 4-year to a 6-year tenure clock (with a formal evaluation after three years). U.S.E furthermore aims to provide a solid research infrastructure that facilitates exchange and cooperation, and stimulates the acquisition of external funding. Staff members are allowed to use third stream income to 'buy' themselves out of their teaching duties (to a minimum

teaching load of 30%), and submission of NWO/ERC proposals is rewarded with a reduction of teaching time). In the future, grant application will become a criterion for tenure.

To achieve the third objective, to produce research output that is beneficial to society, U.S.E. aims to raise awareness of the importance of having a societal impact amongst its staff, for example by discussing the individual contribution of staff members during the annual performance interview. To streamline collaboration with societal partners, U.S.E. has formulated several criteria for such partnerships. Moreover, it offers its staff training on the dissemination of research results, as well as media training.

U.S.E./TKI's strategy for 2017-2020 (LEG's next strategic planning period) and the period beyond aims to further strengthen the quality and viability of the research program. Viability will be reinforced by focusing on research topics that are firmly established yet offer future potential in terms of academic and societal relevance. These are: Future of Work, Entrepreneurship, Sustainable Finance, Sustainability and Economic Development and Behavioural Insights for Policy Making. These topics are believed to give TKI a stronger position within UU's research priority areas, notably in 'Institutions'. To increase viability, TKI will also further develop its Research Support Office and thereby increase its fund raising potential.

Resources

U.S.E/TKI is the smallest research unit in the review in terms of resources. Over the reporting period, its total research staff has fluctuated between 14 and 17 fte. While the group of PhD candidates has been expanded in the second half of the period, the number of assistant professors has decreased somewhat. There were some departures of important faculty before 2011. During the reporting period these vacancies have been filled. Furthermore in the spring of 2015, after the end of the reporting period, U.S.E. appointed four new full professors, one associate professor, four assistant professors and two postdocs. The unit can hire at all ranks. Due to UU's aim to limit the share of flexible staff to 22%, U.S.E. is reportedly cautious about hiring staff on temporary contracts. Compared to other units in this review, there is a reasonably healthy age and gender distribution of staff, with a larger share of female full professors than elsewhere, although remarkably no female associate professors.

Funding levels have remained rather constant. After a peak in 2013, the annual budget dropped slightly in 2014. However, in 2008-2013 expenditures exceeded the income from internal and external funding sources. The university strategically accepted this deficit as a support mechanism to aid growth, which however did not materialise within the reporting period. During the interviews the committee was told that 2015 will be the first year to provide a balanced budget. Direct funding is by far the largest source of income and even increased over the reporting period. In 2008, 65% of the research budget consisted of direct university funding; in 2014 this had increased to 73%. Contract funding is the second most important source of income. In 2008 it amounted to 31% of the annual budget, while in 2014 this had dropped to 26%. Income from second stream funding is almost negligible, especially at the end of the reporting period. In 2014, the income from research grants was just 1% of the annual budget. The self-evaluation report acknowledges that U.S.E. researchers have had only limited success in gaining personal funding from NWO and ERC. To improve this, U.S.E provides support for the submission of research proposals, both in the form of counselling/training, and in the form of seed money. Also, the Research Support Office at LEG-level has been strengthened.

6.2 Assessment of SEP criteria

Research quality

U.S.E.'s academic research strategy for the reporting period focused at producing high quality research while upholding a clear multidisciplinary profile. The multidisciplinary profile was initiated already at the inception of U.S.E./TKI in 2003, and has been maintained consistently throughout the review period 2008-2014. Scientific publications are required to support the multidisciplinary profile (which, for example, means that co-authorships are stimulated) and adhere to high academic standards (which means that articles should be published in ISI journals, and that articles with a high AIS score receive extra points). After it proved impossible to agree on a journal list that would suit the multidisciplinary character of the research institute, it was decided in 2012 to make use of AIS as an internal instrument for assessment.

The committee notes that the continued strategic direction of multidisciplinary economics research gives U.S.E./TKI a unique position among the units in this review. The committee also feels that multidisciplinary research can create many interesting and important avenues of research with much relevance to society. However, the unit has remained the smallest unit in this review, both at the start and at the end of the review period, and has not been able to grow. There are multiple problems with being a small research unit: (i) on average, the researchers have to take on a higher number of different tasks compared to a larger unit, so that the time for research is reduced; (ii) there is less capacity for developing coherent and systematic procedures or to explore promising opportunities; (iii) perhaps most importantly, a small unit is vulnerable in the eventuality that a couple of key persons leave.

The committee feels that the focus on multidisciplinary research may be a restriction for growth, in that potential PhD candidates as well as researchers must have a clear interest in multidisciplinary research. Although the unit hires personnel at all levels, the choice may sometimes be between a top researcher and a researcher with the right multidisciplinary profile, and the unit prefers the latter category, which implies that it misses out on some top researchers, due to its hiring policy.

While the internal commitment to the multidisciplinary strategy is clear, the committee feels that the external visibility of the research profile can be improved. In this respect it notes that U.S.E.'s income from research grants was not significant during the review period. In addition to the rather successful level of contract research, more research grants would make the unit more visible in academia. Increasing the number of positions on editorial boards, which according to the self-evaluation report is not a strong point of U.S.E.'s staff, could also enhance visibility.

The quantitative material indicates that the total number of academic publications decreased slightly from 2008 to 2014, as did the average annual number of academic publications per tenured fte. The number of refereed journal publications per tenured fte remained rather stable for most of the review period, but decreased in 2014. The average annual number of top journal articles remained constant, which U.S.E. considers 'quite satisfactory, given the numbers of staff'. In the future, however, U.S.E. aims to increase its international visibility by publications in general top journals. Over the review period an average of just 20% of the article output was published in top (AIS≥80) journals. The average annual number of PhD defences increased towards the end of the period. Compared to some of the other units in the review, U.S.E. produced quite a few books and book chapters.

The CWTS benchmark analysis shows that U.S.E. has done well in terms of quality indicators (MNCS and PP top 10%). These outcomes led the CWTS to conclude that 'Utrecht University is roughly on a par with the performance of 'top' universities as is to a lesser extent the VU University'. Looking at the percentage of the article output listed in the SEP table that was published in top (AIS≥80) journals, U.S.E. has done less well than some other universities in the review.

The committee acknowledges the excellent research quality performance in the MNCS and PP top 10% categories in the CWTS evaluation. The unit has been able to maintain a high level of publications and citations. When MNCS is compared to the MNJS it concludes that U.S.E. has not targeted the top journals to the same extent as most other units in the review, but has succeeded in getting a large number of citations. This indicates that there is room for further improvement if more top journals are targeted, which may enjoy even higher levels of citations, since top journal articles typically have more visibility and thereby more citations.

The committee notices that the organisational structure is complex. There are three research lines, the unit participates in two UU strategic themes and six UU focus areas and is about to introduce five new research topics. These topics are based on existing research at U.S.E. and they are supposed to sharpen the external profiling of the research output. The complicated organisational structure implies that the average researcher in the unit is involved in various administrative tasks related to these initiatives, which may affect the time for research. The internal organisation is divided into 17 chairs (as of 31 December 2014), with apparently a hierarchy within chairs between the chair holder and other faculty working in the chair's area. The promotion criteria for tenure track and to the level of associate professor are clear and communicated. For promotion to full professor the school can create a chair.

Relevance to society

Producing academic knowledge that is applicable to society at large and therefore usable to societal stakeholders is one of the three core ambitions of U.S.E./TKI. The five research topics for the upcoming period (Future of Work, Entrepreneurship, Sustainable Finance, Sustainability and Economic Development and Behavioural Insights for Policy Making) were chosen because of this ambition. U.S.E. is convinced that 'a concentrated and sustained emphasis' on these topics will increase its visibility to society at large and the opportunities for cooperation with partners from business and public policy. Already, U.S.E. considers its influence on policy makers 'strong'. Contract research makes up an important part of the research budget and quite some PhD positions are paid by external partners.

According to U.S.E its mission – 'the real world perspective' – automatically generates research that is beneficial to society. Hence, it does not make use of policies on societal relevance. Neither does it provide incentives for researchers to enhance the societal impact of their work. USE states that it selects staff with a natural tendency to contribute to society. Moreover the annual assessment form has a reference to societal reference as a signal that it is important.

In its 'narrative' U.S.E mentions a number of examples that illustrate the societal relevance of its research: school to work, ageing, behavioural aspects of energy consumption, and the financial system. One topic, entrepreneurship, even resulted in a new policy direction at the Ministry of Economic Affairs. U.S.E stands out by the large number of publications aimed at a general audience. It also runs conferences aimed at wider audiences (than academic) and claims close connections with business and commerce.

The committee concludes that the societal relevance of the work of U.S.E is very good. U.S.E. may consider stepping up its policies on societal relevance by surveying best practices at other schools. It may also engage in a more systematic review of valorisation of its research.

Viability

U.S.E./TKI has a history of focussing research on multidisciplinary economics. This has been the clear strategy from its inception in 2003 and has been maintained during this review period, 2008-2014. The multidisciplinary approach is firmly rooted in the Utrecht University policy, advocating the interaction between researchers in different disciplines. The broad strategic themes and focus areas of Utrecht University U.S.E./TKI may limit flexibility in developing new areas of research, despite the fact that the strategic themes and focus areas are rather broad. U.S.E. intends to introduce a certain set of research topics in addition to the three research lines to emphasise societal relevance.

In the unit's self-evaluation, multidisciplinary research is noted as a strength as well as a partial weakness. It distinguishes U.S.E./TKI from other schools of economics and business in the Netherlands, and provides a clear direction for the research strategy. Communication with other departments and areas within multi-disciplinary research projects can be difficult with respect to differences in methodology and research perspectives. Even though these differences should complement each other they may cause communication problems.

The basic flow of direct funding is related to the number of students. There seems to be a sufficient number of students in the bachelor programmes, but less so at the research master's level. Only around ten students are admitted each year to the research master's programme. Overall, the direct funding has increased, but only slightly, from 2008 to 2014. Research grants have more or less disappeared during the period and the level of contract research has declined slightly. This implies that the unit has become more dependent on direct funding.

The age and gender distribution of staff probably represents the best gender balance of all units in this review, even though there are no female associate professors.

The committee perceives the viability of U.S.E./TKI to be good. It notices the strengths and weaknesses associated with the focus on multidisciplinary research. Research can be interesting and important as well as relevant for society, and this has led to excellent research quality, particularly in terms of citation performance. However, the unit has not grown and has not been successful in getting research grants (NWO and ERC), but there may be new opportunities within EU Horizon 2020, and through additional funding from the private sector. The department is small, with limited robustness and stability. Some growth would be advisable, but research quality has to be assured. The chair structure limits the flexibility of personnel policies, and restricts the promotion to full professor based on merit.

PhD programme

U.S.E. hosts three types of PhD candidates. First, there are internal candidates who are employed by the university and financed either by the university itself, by industry or – more rarely – by a funding agency (NWO). Typically, they are appointed at U.S.E. for two sequential periods of 18 months, three years in total. The second category is made up of external PhD candidates who are employed elsewhere and complete the PhD in their own time. Third, U.S.E. has a number of scholarship PhD candidates paid by international organisations.

Over the review period, U.S.E. hosted an annual average of 38.4 PhD fte's (internal and external candidates combined). The average annual intake for the 2006-2010 period was 4.6 candidates (internal and external combined). Of the internal candidates, 26% managed to complete their projects within four years, while after five years almost 70% of the candidates had graduated, 13% had dropped out. Between 2008 and 2014, 45 PhD theses were completed, which equals an annual average of 6.4 theses.

U.S.E.'s PhD programme is embedded in the Graduate School of the LEG Faculty. The training programme that PhD candidates have to complete depends on their prior education. Internal PhD candidates that do not have a research master's degree have to complete a course load of 52.5 EC from the research master's programme in Multidisciplinary Economics, while external PhDs are allowed to take up to 30 EC of additional coursework to make up for methodological deficiencies or lack of field-specific knowledge. It is the responsibility of the supervisor to decide whether such additional courses are needed. The teaching load is on average 10% during the duration of the PhD programme. Most of U.S.E.'s PhD theses consist of three to four separate analyses. Revised versions of these must be publishable in international academic journals. Theses can be written in Dutch, although English is preferred.

The first supervisor of the PhD candidate is always a professor and he/she is primarily responsible for the admission of the candidate. While additional supervisors may be involved, this is not mandatory at U.S.E, as is the case in other units participating in the review. External PhD candidates only receive 'informal' supervision from the intended supervisor in the first stage (1-2 years) of their projects. Formal commitment of U.S.E. only starts in the second stage, when it is sufficiently clear that the candidate has the capacity and drive to complete the project. From that point on, external candidates are given access to facilities and services and a so-called Training and Supervision Agreement (TSA) is signed by the external candidate, the supervisor(s) and the TKI director. For internal candidates a TSA is drawn up at the start of the project. Supervision consists of meetings with the supervisor(s) and an annual progress meeting. The frequency of meetings with the supervisor varies from more or less daily contact to one contact every 2 months. After 15 months there is a formal go/no-go decision.

Additional facilities for PhD candidates include a PhD 'ombudsman' (confidential advisor) and a PhD council at the Graduate School level. A 'PhD Activating Career Event' is organised at the level of the university to prepare the Masters' students for their PhD studies. The help for PhD candidates in their final stages to prepare themselves for the labour market is not institutionalised but depends heavily on the supervisor and his or her network. The average student does not seem to spend much time abroad in other research environments. There is limited (financial) support for this and the same goes for receiving visiting researchers for shorter or longer visits at U.S.E./TKI.

Roughly 16% of the recent graduates have found employment at U.S.E., most commonly as assistant professors, but also as post-docs. Quite a few graduates go to other Dutch universities or (seemingly) back to a university in their country of origin. Economic policy institutes are another important employer for U.S.E. graduates. The outflow of PhDs to other countries is somewhat limited.

The committee notes that PhD candidates enjoy the multidisciplinary approach that allows them to collaborate with other research areas in other departments. At the same time, there seem to be limited opportunities to visit other research environments to meet and learn from

other scholars, possibly due to a limited number of similar research institutions. However, this limits the employability of the PhD candidates at other academic institutions. The help for candidates to find appropriate positions within as well as outside academia is heavily dependent on the networks of the respective supervisors. According to the committee, having two or more supervisors would lead to a richer network and more opportunities. All in all, the PhD candidates are not exposed to international research environments and scholars or supported in the transition to the next job after their PhD programme to the same extent as PhD candidates at most other units in this review. U.S.E./TKI has a recommendation of not hiring its own PhD candidates, but the committee is aware that such a policy can be problematic with respect to the specific focus on multidisciplinary research. From a hiring perspective, the pool of talented researchers that appreciate multidisciplinary economics research can be limited. Nevertheless, hiring own graduates should be avoided as much as possible. From the student perspective, the exposure to other research environments is important during the PhD studies as well as for the first job after the PhD studies.

Research integrity policy

In line with the VSNU Code of Conduct, UU has formulated its own regulations for the protection of academic integrity. Newly appointed researchers are asked to declare that they are familiar with the Code and will act accordingly. In addition to this university-wide Code, there is an integrity policy at the Faculty level. For staff members, there is the UU academic integrity complaints procedure. Over the past years TKI itself has organised several plenary staff meetings on research integrity. Complaints can be filed via the UU-wide integrity counsellor or the 'PhD ombudsman' (for PhD candidates).

Currently, TKI staff members are themselves responsible for the management and availability of data. In line with a university-wide policy to ensure that data remain available after the end of a research project, LEG considers the introduction of a central database in which data of finished projects will be stored. Only the researchers of the project and TKI will be given access to the data.

The committee notes that some measures are already in place and that others are on their way. Overall, the issue of research integrity seems to be transparent in the organisation.

6.3 Recommendations

The committee concludes that the research quality and scientific relevance of the research is very good. U.S.E./TKI has had a clear focus on multidisciplinary research in economics for a long time and has thereby established itself in a special position in economics research. The unit has been able to achieve an excellent number of scientific publications and citations. A strong focus and relevance to society is manifested through publications and conferences aimed at a general audience, as well as having an important part of the research budget made up by contract research. The SWOT analysis clarifies that U.S.E./TKI is aware of the pros and cons of doing multidisciplinary research, which aims to guide the unit in further advancing the multidisciplinary nature of its research strategy.

The committee offers the following recommendations for further improvements:

Multidisciplinary economics research. Arguably, the social sciences are becoming increasingly multidisciplinary. U.S.E./TKI has followed this direction for more than a decade. Its growth has been limited however and it is worth analysing why this is. The combination of multidisciplinary research and a strong focus on societal relevance may limit the pool of talented people. Although societal relevance does not necessarily focus research on the

Netherlands, currently it appears that the school is less internationally visible than other units reviewed by the committee. In addition to the rather successful level of contract research, more research grants would make the unit more visible in academia. In order to grow, a more internationally and academically oriented strategy (with a higher chance of securing grants) may be necessary.

Research quality. The committee commends U.S.E./TKI for its excellent citation performance, but the exposure in top journals is somewhat limited. Typically, papers that are published in higher impact journals generate a higher impact themselves. Consequently, a higher number of top publications would probably lead to even larger citation scores, so there is potential to further improve the citation performance.

Size. The committee notes that U.S.E./TKI has been the smallest research unit during the review period 2008-2014 and still is. The intended level of growth has not been realised, although there is currently some expansion in the faculty. To grow, the unit has to attract more external funding. An important instrument for this is to provide stronger internal support for writing grant applications and stronger incentives for acquiring external grants.

Organisation. From an outsider perspective, the organisation seems complicated, with chairs, research lines, strategic themes, and focus areas (the latter two introduced by the university), and the intention to focus on a certain set of research topics, which might add an extra organisational dimension. This complicated structure is even more of a disadvantage in view of the small number of faculty members who have to sustain the organisational structure. The committee recommends E.S.E./TKI to drastically simplify its management structure and for instance to consider abandoning the chair structure and its implied hierarchy.

Hiring. Current faculty hiring practices emphasise finding people with a strong interest in interdisciplinary work, even if these researchers have a weaker overall research profile. The committee would recommend taking a more careful look at candidates who are not currently doing multidisciplinary work, but have a stronger research profile. There may be room for more specialised researchers in U.S.E. and as these candidates' research develops, they may well start conducting more interdisciplinary work.

PhD programme. The committee recommends that the PhD candidates be more exposed to international research environments and scholars, not only from Europe, but also from other continents. The committee also recommends that having two or more supervisors for each PhD candidate becomes mandatory. The unit can consider what actions are to be taken to improve the placement of PhD candidates in top schools, such as implementing formal policies to send them to schools in the US and elsewhere for a few months or a term. The committee would encourage U.S.E. to invite more seminar speakers with more of a global emphasis (less European) to expose PhD candidates to a greater variety of research. These speakers should also be encouraged to spend more time at U.S.E. to allow for more in depth interaction with both faculty and PhD candidates

6.4 scores

Quality	*Very good*
Relevance to society	*Very good*
Viability	*Good*

7. University of Amsterdam, Amsterdam Business School Research Institute

7.1 Introduction

Organisation, leadership, strategy and targets

Research in economics and business at the Faculty of Economics and Business (FEB) of the University of Amsterdam (UvA) takes place within two separate research institutes: the Amsterdam Business School Research Institute (ABS-RI) and the Amsterdam School of Economics Research Institute (ASE-RI). This chapter will discuss ABS-RI, while the next will deal with ASE-RI.

Since its establishment in 2002, ABS-RI has enlarged its scope, developing from an initial focus on Finance, Accounting, and Information Management to incorporate programmes in HRM/OB and International Strategy & Marketing. The research programme in Information Management was discontinued during the FEB reorganisation in 2011. ABS-RI currently consists of six sections (Accounting, Entrepreneurship and Innovation, Finance Group, HRM/Organisational behaviour, International Strategy & Marketing, Operations Management), which administer budgets and formally employ the academic staff.

During the reporting period, ABS-RI selected 'corporate governance' as the focus for its research. This 'research priority area' (RPA) crosses different sub-disciplinary areas within the unit and is considered societally relevant. It brings in additional funding from the faculty level that can only be allocated to researchers active within the theme. Key research themes related to corporate governance are financial services, risk & regulation; non-financial disclosure & accountability, proactivity at work & (ethical) leadership; and corporate social responsibility & sustainable business.

The self-evaluation report describes the current review period as the 'consolidating' and 'expanding' phase of ABS-RI. During the reporting period, ABS-RI aimed to raise its research output and quality to internationally competitive levels with clear areas of excellence. ABS-RI's mission is to impact international business and society at large by conducting high-quality, innovative academic research across a broad range of business disciplines. It also intends to 'foster "independent minds" by research-based teaching that meets the highest international standards'.

By late 2009 major financial deficits were discovered at FEB, which resulted in a reorganisation in 2010-2011 and a discontinuation of certain research lines. As part of the new decentralised budgeting model FEB now allocates funding for teaching based on credits earned by students and diplomas. Research funding is based on research time earned according to the publication criteria. The FEB reorganisation had substantial (but according to the self-evaluation report 'temporary') effects on ABS-RI. Teaching loads were temporarily higher, internal promotions came to a halt and there was a hiring freeze. As a result several staff members left and expansion plans (including the establishment of a research master's programme) were delayed.

Moving on from the restructuring, ABS-RI's current strategy is to 'build vibrant research groups through systematic recruitment'. In order to meet the aim of retaining good faculty, its policies firstly focus on the development of the research capability of existing staff and the

reclassification of non-research faculty as teachers. To this end, research time is allocated on the basis of past publication success in high quality journals. Staff members who meet the ABS-RI criteria earn 50% research time. A second aim is to recruit new staff, and ABS has developed policies to provide a good working environment and attractive employment conditions. A third element in ABS-RI's strategy is to increase funding.

Targets with regard to research are to further increase the quality and international impact of research through high-quality journal publications. Over the review period, the ABS-RI journal list was revised to allow for more differentiation and the period for counting staff members publication credits was increased from three to five years. In addition, a more standardised 6-year tenure-track system was introduced across FEB. The tenure track criteria include criteria for research output and societal relevance, but also the obligation to apply for research grants. For promotion to higher ranks similar criteria apply. A joint research master's programme with the VU was developed to enhance the structure of the PhD programme, accepting its first intake in 2015. There are also targets relating to further developing the unit's societal relevance.

ABS-RI's strategy for the future is to continue the existing approach of retaining good faculty, hiring new talent and applying for grants and contract funding, while streamlining the support system for applications. The new tenure track requirements and research allocation system will be closely monitored and options for allocating more research time to the most productive researchers (in terms of high-quality publications) will be explored. Further development of the research master's and PhD programme is also an aim for the future, as well as developing policies on research integrity and data management. With regard to societal relevance the unit aims to further embed the notion of valorisation, taking an active approach to societal interaction and exploring non-traditional forms of outreach such as online newsletters, blogs and other web-based communications.

Resources

The reorganisation at the Faculty in 2010-2011 has had major effects on ABS-RI, both in terms of staff numbers and in terms of funds available for research. While the unit's staff was steadily growing in the first half of the reporting period (from 36.6 fte in 2008 to 42.7 fte in 2010), staff numbers fell in the 2011-2013 period (to a low point of 29.4 fte in 2012). In the last year of the review period staff numbers were almost back to the level of 2010 (41.7 fte in 2014), mostly due to new hires at the level of assistant professor. The number of full professors is still smaller than at the start of the review period. A key challenge in the future will be to manage the career development of the new hires. In this regard it is significant that FEB does not restrict the number or proportion of senior positions on the basis of some organisational chart, instead having a policy of promotion on individual merit. In addition to the staff listed in the table in the self-evaluation report, ABS-RI also benefits from a number of researchers who are employed by a limited liability company under the UvA holding. During the review period the percentage of non-Dutch staff members has grown, from 45% in 2008 to 59% in 2014. The ratio of male to female staff has remained rather constant (74%-26% in 2014). At the end of the review period, 22% of the full professors were female.

The data on funding reflect the 2010-2011 reorganisation and the resulting decrease in research staff. The ratio of first, second and third stream funding in the annual budget has remained relatively stable over the review period. The share of direct funding is high (90.1% at its peak in 2013 and 82.1% at its low point in 2008), while the share of research grants is small and has been decreasing (from 3.0% in 2008 to 1.4% in 2014). During the site visit the lack of a sophisticated support system for grant applications was mentioned as a weakness.

Contract research (including EU grants) accounts for the remaining 6-15% of the total annual budget. Additional money to support the unit's research is generated from executive teaching.

7.2 Assessment of SEP criteria

Research quality

The main objective of the post-2008 period has been to build 'vibrant research groups through systematic recruitment', supported by the development of a 'strong research-driven culture'. Policies in support of this include performance-based allocation of research time, personal research accounts, a focus on corporate governance as a central research theme, and an emphasis in all of this on publication in leading/top research journals, with a recent move to a more differentiated journal list. The unit aims to achieve a stable position in the 'top-15 state-funded European business schools', equivalent to the top-50 worldwide. The committee believes that this is based on a realistic assessment of what is feasible relative to leading US and European schools. The strategy is clear and credible, and the unit has demonstrated a willingness to implement it.

Looking at the productivity data, the number of academic publications per year decreased in the final years of the reporting period, as did the average annual number of academic publications per tenured fte. This is described in the self-evaluation report as an effect of the 2010-2011 reorganisation. In the final years of the reporting period the annual number of refereed journal publications per tenured fte also decreased. However, there is evidence of progress in terms of output quality. The average annual number of articles in top journals (AIS≥80) was not affected by the productivity trends towards the end of the reporting period, but remained constant. On average, 30% of the article output was published in top (AIS≥80) journals during the period, with a peak of 39% in 2014. There is also evidence of progress on citations, across a range of indicators. In terms of the mean normalised citation scores (MNCS, combined for ABS-ASE) UvA economics and business research outperforms most of the European peer institutes. Compared to the other Dutch universities, it is in the (lower part of the) middle bracket. In terms of the proportion of publications belonging to the top 10% most highly cited papers (PP Top 10%), UvA is slightly below UU and VU, but well ahead of other Dutch (and most European) universities.

Overall, relative to its top-15 European/top-50 world-wide target, the unit may lag on some aspects of academic reputation, but the committee notes that on key research indicators (e.g., citations and Dallas ranking) it is already ranked at this level and further progress appears feasible. Some of the work produced in this unit is certainly of the highest quality, as evidenced for example by the key scientific publications provided. These include work on finance/capital structure, stakeholder theory, HRM and performance, innovation, and sustainability reporting, suggesting that the unit is successfully meeting its strategic aim of producing 'internationally recognised research across a broad range of business disciplines'. There is evidence that finance is still the strongest area, but there has been significant progress in other disciplines.

There has been a move to broaden the range of business disciplines, moving towards the full range business school model. The unit houses an MBA programme, which has created the need to build expertise in areas that were missing. However, an attempt is being made to focus work across several disciplines into an overall theme of corporate governance, as a research priority area supported by funding. The committee notes that this seems to provide a good route to integration and also to greater societal relevance.

Aside from the period of restructuring in the middle of the review period, total research staffing has been increasing, but this has been primarily at the more junior (assistant professor) levels, with the number of full professors yet to regain the levels of 2008. This suggests to the committee that the attempt to build 'vibrant research groups' is still a work in progress, and in the coming years senior recruitment and the development of the junior faculty will be a key challenge. Salary levels are seen by the unit as a significant problem in the recruitment of senior staff and may also impact on the retention of tenure track staff as they develop.

Staff members report that there is a very positive, collegial culture, with a great deal of enthusiasm for research. This is seen as helpful in terms of collaboration and also for recruitment and retention. The central location of ABS is also helpful for recruitment. However, there was a feeling amongst the committee that the organisational structure can be simplified. For instance, sections and research programmes overlap completely, so it is not clear what the role of research programmes is beyond the role of sections.

Several of the key initiatives, including the revised tenure policy and the research master's programme are new, suggesting that the full effects of the unit's current strategy and policies are yet to be seen.

Relevance to society

Whereas there has always been an intention to produce work of societal relevance at ABS-RI, the committee found that this has been given added structure in recent years. Recently, the unit has also attempted to take advantage of the city of Amsterdam's commercial position, For instance, the self-assessment report describes several research projects on entrepreneurship and management in the creative industries. Relevance is addressed by the selection of research topics (including the corporate governance focus), by making results available to practitioners and society (e.g. through publication in managerially-relevant journals), and by seeking interaction with practitioners and social groups. Considerable thought appears to have gone into identifying the societal relevance of key research themes and the self-assessment report contains detailed write-ups that identify the research themes and researchers, the means of dissemination to social groups, and in some cases the specific social impact being made.

Although ABS-RI does not have an explicit policy or strategy for societal relevance, active interaction with target groups is high on the agenda. Fields where ABS-RI cooperates with firms include creative industries, HRM, management and finance. ABS-RI finance experts had a high media profile during the financial and European crisis. Evidence is provided of the impact of both indirect funding and contract research to society, and the Amsterdam Centre for Entrepreneurship appears to provide a sound basis for further progress. In addition, ABS-RI interacts with practitioners through its open enrolment MSc courses and programmes for students working close to full time, where in a number of cases students carry out projects in their own organisations. These practitioners are a prime societal target group for ABS-RI, with 1000 students enrolled in the in the part-time MSc programmes in the last academic year of the reporting period, compared to 1200 full time MSc students. Also, ABS-RI produces a considerable number of publications aimed at the general public.

Valorisation is ABS-RI's main means of relating to society. Progress has been made and the impact is already impressive due to the large scope of research topics relevant to companies and societal stakeholders. Still, it seems that the unit is in the relatively early stages of systematically considering societal impact and valorisation. The documentation focuses on

dissemination and interactions with societal groups rather more than on demonstrating actual impact on organisational and social policies and practices. The committee notes that ABS-RI would do well to try to gain additional insights into best practice through its EQUIS and EFMD links.

Viability

Although ABS-RI was seriously affected by the financial troubles at the Faculty level, its financial position at the end of the review period appears relatively healthy. The data suggests that direct funding remains high and it seems that the move to second and third-stream funding is at a relatively early stage. Research grants in particular account for a small proportion of funding, suggesting that this is a potentially fruitful area for development. It is suggested in the self-evaluation report that the funding figures understate the extent to which the unit derives income from non-government funded teaching programmes, suggesting that some diversification of funding has already taken place, and that the Faculty may have some flexibility and discretion on funding.

In its self-evaluation report, the unit provides a realistic and useful SWOT analysis. Whilst the high quality of researchers is identified as a strength, the low number of senior researchers is seen as a weakness and unattractive salaries and international competition for faculty are threats. The committee notes that the unit has had some success in recruitment, especially at the more junior level, but it is clear that faculty recruitment will continue to be a challenge and a proactive approach will be required.

Overall, in light of its funding position, the strategies and policies in place, and the opportunities identified, the unit appears to have a high level of viability.

PhD programme

The business PhD programme remains relatively small at around 3-8 entrants per year. Over the review period, ABS-RI hosted an annual average of 12.2 PhD fte's. 20% of the candidates from these cohorts managed to complete their projects within four years and after five years 51% of the candidates had graduated, 6% had dropped out. Between 2008 and 2014, 56 PhD theses were completed, which equals an annual average of 8 theses.

ABS-RI has gradually increased the initially small number of non-Finance (i.e. non-Tinbergen Institute) PhD candidates. The share of external (essentially part-time) PhD candidates has now risen, which points at increased collaborative research with outside organisations. Non-TI PhD candidates, who are employed for a period of four years, are currently selected in an open recruitment procedure by a small selection committee that includes the supervisors. Agreements on training and supervision are formalised in an individual Plan on Education and Supervision (OBP). During the review period, when there was no research master's programme in business, training was tailored to the needs of individual PhD candidates.

The new research master's programme in business, jointly organised with VU, has recruited its first students in 2015. It provides a standardised 2+3 structure for the Business PhD programme (something which is already available for Finance PhD candidates within TI). It has taken ABS-RI several years to implement the new programme, with the VU collaboration initially delayed due to the restructuring of 2010/11. Especially given the small size of the programme, closer collaboration with VU seems appropriate to the committee. However, given the nature and recency of this and other changes to the PhD programme, it is likely that the full impact will be felt only in the next few years.

Additional changes described in the self-evaluation report include a move to co-supervision and article-based dissertations, with the latter expected to improve job prospects. The committee notes encouraging signs in terms of quality of job placement, with several assistant professorships in good European and Asian schools. It appears from the data that 11% of the PhD graduates from the 2005-2010 cohorts have (initially) remained at UvA as postdoc, assistant professor or in a temporary teaching position. PhD candidates have an annual budget of €2500 for international travel and conference attendance.

The feedback from the PhD candidates that the committee spoke with was very positive. In particular, they indicated that their supervisors are very supportive and responsive, and that their doors are always open to discuss issues. Amsterdam is seen as an excellent location, providing good access to organisations, and in some cases supervisors have helped arrange business internships. Co-supervision was the norm during the reporting period, with some PhD candidates having a third supervisor in another department. Candidates reported that they are required to teach and they welcomed that, and this was usually scheduled to allow them to complete the assignment with an efficient use of time. Training was required before teaching and courses were provided at Faculty level. Students recognised that the new research masters programme would provide more structure and preparation, although some students welcomed the flexibility provided by the pre-research master's programme (e.g., 'no need to do introductory statistics').

Research integrity policy

UvA adheres to the principles of the VSNU's Code of Conduct for Scientific Practice. It has also formulated its own code of conduct, which is applicable to all staff and students. UvA's Ethics Committee (AIEC) advises the University Board on guidelines with respect to ethical issues. Confidential advisors are present at all of its Faculties, and a whistle blower scheme is in place. Research proposals and theses are subjected to integrity and plagiarism checks. An ethics committee has also been installed at the Faculty level (EBEC). University-wide guidelines for research data management (RDM) have recently been adopted but still need to be implemented at the Faculties and Institutes. ABS is currently preparing an ABS RDM plan that takes the particularities of business research into account.

The committee has established that ABS-RI faculty members are actively involved in discussing integrity issues at the policy level, within the university and nationally. It appears that the practical dilemmas and implementation issues involved have been widely discussed within the unit, and research students were very well aware of the issues and procedures.

7.3 Recommendations

Overall, ABS-RI is moving in the right direction, with a clear and credible strategy. It now seems to have most of the policies in place to continue its trajectory of improvement, and the fact that many of the initiatives were implemented only recently suggests that improvements in research quality and in the PhD programme will continue. There is a positive culture and staff and students appear enthusiastic and strongly committed to producing high-quality research. Unlike many units, ABS-RI is attempting to develop a more or less full-range business school, and in recent years the unit has developed research strengths in areas other than finance, where it has traditionally been strong. This is continuing and will hopefully gather pace as critical mass is developed.

In the spirit of continuous improvement, the committee offers the following recommendations:

Recruitment. Although there has been some success at more senior recruitment lately, the unit still relies on a relatively small number of full professors. This suggests that there may be merit in further evaluating recruitment, retention and career development procedures and practices, taking a more proactive approach to recruitment, and ensuring that the career development path from tenure track, through associate to full professor is clear and is communicated to those involved.

Cooperation with Vrije Universiteit Amsterdam. The unit appears to be developing a closer relationship with its peer unit in VU. This is seen most clearly in the development of the joint research master's and there has also been some discussion of the possibility of working more closely on recruitment. Greater cooperation with VU on research and staffing would seem to be a good idea, especially given the relatively small size of ABS-RI and the likely complementarities with the VU unit.

Research grants. Research grants are an area where ABS-RI needs to make improvements. Whilst executive teaching may well provide an alternative source of income, this does not necessarily provide the prestige and recognition of grants from competitive funding agencies such as NWO. Consideration should be given to providing stronger support at unit level for individuals seeking to apply for grants. There may also be merit in providing additional incentives for researchers to apply for grants, and perhaps in exploring additional opportunities for contract research.

Small-scale culture. Currently, ABS-RI appears to have a positive collegial culture. This is helpful in recruitment and retention and perhaps also in building research collaborations amongst colleagues. However, to the extent that the unit grows, this 'small-scale culture' may fade in the future. Unit management will need to be sensitive to this and will have to balance the need for formalisation and flexibility.

ABS-ASE cooperation. The committee has evaluated the two research units within the Faculty (ABS and ASE) separately. In its discussions, it did not find evidence of serious rivalry or conflict between the two units, but there was a suggestion from faculty of a need to look for ways to overcome the 'distance' between ASE and ABS, for example through macro and micro finance collaborations and through ABS finance colleagues playing a stronger role in the research masters curriculum in the Tinbergen Institute. Certainly, ABS-ASE cooperation may be an area for consideration by Faculty management.

Societal impact. ABS-RI has made progress in demonstrating societal impact, but more could perhaps be done to demonstrate actual impact on organisational and social policies and practices. The unit may use their EQUIS and EFMD links to gain additional insights into best practice in this area.

Internationalisation of PhD programme. The proportion of international students is likely to grow further in the research master and PhD programmes. These programmes will need to ensure that they are providing the necessary support services and career counselling tailored to the needs of these students.

Organisational structure. There may be merit in reviewing the organisational structure, which may be a little over-complicated, with sections and research programmes.

7.4 scores

Quality	*Very good*
Relevance to society	*Very good*
Viability	*Very good*

8. University of Amsterdam, Amsterdam School of Economics Research Institute

8.1 Introduction

Organisation, leadership, strategy and targets

Research in economics and business at the Faculty of Economics and Business (FEB) of the University of Amsterdam (UvA) takes place within two separate research institutes: the Amsterdam Business School Research Institute (ABS-RI) and the Amsterdam School of Economics Research Institute (ASE-RI). The current chapter will discuss the latter.

ASE's research covers the wide area of economics, econometrics and actuarial science. Currently, the research unit consists of the following seven research programmes:

1. UvA-Econometrics;
2. Equilibrium, Expectations & Dynamics;
3. Actuarial Science & Mathematical Finance;
4. Macro and International Economics;
5. Human Capital;
6. Experimental & Political Economics;
7. Markets & Organisations.

ASE-RI is also host to Behavioural Economics, one of UvA's twenty research priority areas (RPA's). Researchers from different programmes collaborate within this RPA that brings in additional funding from the Faculty level. Additionally, ASE-RI researchers participate in FEB's research focal area Risk and Macro Finance.

ASE-RI's mission is to 'foster the academic ideal of intertwined university teaching and research'. The institute aims for research results in (quantitative) economics that significantly improve the understanding of the operation of economic systems, the behaviour of agents in the economy and the effects of economic policies. Although research is often inspired by practical problems in business, government and society, ASE stresses that results should first of all be assessed against academic standards. Contributions to public debates should be a consequence of developing reliable knowledge rather than a primary goal.

ASE-RI's strategic plan of 2014 centres around the unit's ambition to become a Top-10 school in Europe (as defined by the QS World University Rankings) in each of the broad areas micro-economics, macro-economics, and quantitative economics. As a result, the unit prioritises quality over quantity and researchers are encouraged to publish in top outlets. The HR-policy states that vacancies are to be filled at the tenure track level, and tenure criteria include teaching performance, earning capacity and compliance with the Tinbergen-fellowship criteria. As of 2014, recruitment of tenure-trackers 'occurs through the American academic job market'. Research time is allocated on the basis of research output, with a maximum research appointment of 50%. In the future, ASE-RI hopes to adopt a system that allows for a larger proportion of research time in some cases. The unit also aims to extend its international impact through placement of graduates of the PhD programme at leading universities.

Specific targets for the 2011-2014 period were to gradually increase the percentage of internal research funds intended for research related to the RPA, to increase the number of top

journal publications per research fte, to improve completion times of PhD projects and increase the number of defences, and, lastly, to increase the share of competitive funding in the annual research budget to compensate for declining direct funding.

By late 2009 major deficits were troubling FEB, which resulted in a reorganisation of the financial administration in 2010-2011 and a discontinuation of certain research lines (i.e. the History and Methodology of Economics group and the Operations Research group). Teaching loads were temporarily increased and there was almost no intake of PhD candidates in 2010. This is reflected in a temporary drop in publications and PhD defences. The reorganisation has led to the introduction of a new research and teaching allocation model at FEB. By way of a university-wide decentralised budgeting model, research funding is allocated to FEB as a lump sum based on the number of bachelor's/master's diploma's and PhD graduations. In the new Faculty allocation model, this budget is next channelled to research programmes on the basis of PhD graduations and research time allocated to individual researchers. To this end, both ASE-RI and ABS-RI have adopted a competitive allocation system for research time. In addition, a more standardised 6-year tenure-track system was introduced across FEB during the reporting period. The tenure track requirements include criteria for academic output and societal relevance, but also the obligation to apply for research grants.

ASE-RI's strategy for the future, as defined in the FEB's strategic plan 2015-2020, is to continue pursuing the existing targets, while also increasing the number of research projects, personal grants and distinctions, and aiming for better placement of PhD graduates.

Resources

ASE-RI's staff numbers were quite constant in the first half of the reporting period (with an average of 32.2 fte excluding PhD candidates), but decreased somewhat in the second half of the period (to an average of 29.4 fte excluding PhD candidates), most likely due to the reorganisation at the Faculty level in 2010-2011. At the same time, the PhD population, which includes both internal and external PhD candidates, increased. Women are underrepresented at all levels. For 2014, the unit lists a total of three female assistant professors out of a total of 17 (18%); and one female full professor out of a total of 22 (5%). No associate professor is female.

The data on ASE-RI's funding reveal that this unit was less severely affected by the reorganisation of the Faculty than ABS-RI. Apart from a noticeable dip in 2011, the annual research budget, as well as annual expenditures, increased steadily. The ratio of first, second and third stream funding in the annual budget remained rather constant over the review period. The share of direct funding fluctuated between 57 and 67% of the budget, while research grants (including EU funds) were responsible for 19-30% of the budget. Contract research for industry and government constituted 10-20% of the available funds. Most of the applied research, however, is done at a separate organisation (SEO Economic Research).

8.2 Assessment of SEP criteria

Research quality

The school has gone through a major restructuring as a result of budgetary shortfalls, which has led to a loss of some prominent researchers and generally has hampered productivity for a number of years. The quantitative material indicates that the number of academic publications per year decreased somewhat, as did the average annual number of academic publications per

tenured fte. The annual number of refereed journal publications remained constant throughout the period. On average, half of the article output was published in top (AIS≥80) journals, which is very high compared to other units in the review. In the final year of the reporting period, the share of output published in top journals even grew to 65%.

Research groups that did not perform very well at the last review were reduced or even terminated, and publication quality was strongly emphasised in the remaining groups. The ASE department (economics) is close to the top-10 of European schools and among the top-3 in the Netherlands. The quality of journals in which the unit publishes is high, and includes the top-5 journals in the field. In terms of the mean normalised citation scores (MNCS, combined for ABS-ASE) UvA economics and business research outperforms most of the European peer institutes. Compared to the other Dutch universities, it is in the (lower part of the) middle bracket. In terms of the proportion of publications belonging to the top 10% most highly cited papers (PP Top 10%), UvA is slightly below UU and VU, but well ahead of other Dutch (and most European) universities. Overall, the school appears on the right track and has a number of strong groups, in particular in experimental economics. The school manages to publish in top economics journals approximately once a year.

Although the unit is generally doing well and has been able to deal with past financial problems in an expeditious and effective way, the committee has a number of observations that may help to further improve, governance and quality.

The unit's ambition to be among the top-10 schools in Europe in each of the broad areas microeconomics, macro-economics, and quantitative economics appears realistic and is perhaps even somewhat modest. The adoption of a 6-year tenure track system, with hiring of junior faculty on the US job-market and clear promotion rules without limitations on the number of full professor slots creates the conditions for further quality improvement.

Even so, for the goal of becoming a top-10 school to be achievable, the set of management instruments likely needs to be extended, while the governance structure should be streamlined. The governance structure comes across as unnecessarily complicated with numerous management layers with overlapping responsibilities, including the broad Faculty Management level, research school, sections, research programmes, research priority areas, and research focal areas. Somewhat orthogonal to these various entities, the Tinbergen Institute takes responsibility for the research masters and PhD programmes. It should be possible to simplify this structure considerably and thereby reduce time spent on meeting, coordination, and reporting. A simplified governance structure should also help to bring more clarity for faculty members about which body is responsible for what.

One of the main instruments in fostering research (and attracting excellent researchers) is the allocation of research time based on research output. Currently, faculty members receive a maximum of 50% research time if they qualify for fellowship of the Tinbergen Institute. In exceptional cases top researchers will be offered more than 50%, in response to market considerations. There are discussions within the Faculty to further refine research time allocations based on publications, but apparently that discussion has not led to a clear policy yet. The committee would encourage the unit to implement a clear and differentiated research allocation system based on research performance, but also on career and market considerations (e.g. for junior researchers in the tenure track system).

The unit achieved limited success in acquiring large personal grants and notes that this may be partly due to support systems that need to be strengthened. Since success in bringing in

research grants is not only important for financial reasons, but also a signal of quality and reputation, implementing a support system that is minimally bureaucratic, but allows researchers to concentrate on the content of proposals without having to worry about the administrative side is highly recommended. This would include a procedure for identifying opportunities for grant applications.

The unit rightly realises the importance of international contacts, both by researchers from other institutions visiting and of own faculty members visiting research groups elsewhere. Such exchanges are important for the exchange of ideas and for making sure that the unit is fully integrated in the international scientific community. Nevertheless more could be done. The Faculty has a formal sabbatical policy, but it seems to be underused, possibly because the option of using a sabbatical is not widely known. It seems important therefore to communicate the policy more clearly. It will allow faculty members to take semesters off on a regular basis to visit research groups elsewhere. A more generous individual travel budget for conference attendance and short term visits to other research institutions should also be considered.

The gender distribution at ASE-RI should be characterised as very unbalanced even by economics standards (where generally female researchers are not well represented). Although sometimes ad hoc allowances are made for personal circumstances when promotion or tenure decisions are at play, no systematic policy is in place to improve the gender balance. The committee urges the unit to consider policy measures that make it possible for female researchers to thrive within the unit.

Relevance to society

The societal relevance of ASE-RI is outstanding in a select number of research areas, especially macroeconomic finance and the financial crisis, pension reform planning, and through the TIER institute for evidence-based education reforms. Even taking into account that some faculty members with a part-time affiliation with ASE-RI performed most of their societal relevant research outside ASE-RI, the impact of ASE-RI researchers through dissemination of their work to government and the public debate is impressive. In particular in the field of education ASE-RI stands at the forefront of demonstrating the feasibility of evidence based policy, both at a national level and in Amsterdam. Grants obtained illustrate how well this is received both by the ministry and the municipality of Amsterdam. High quality research appears to match well with excellent quality in policy relevance. Valorisation yields excellent results in these fields, yet can be further developed in other fields.

Contract research has been outsourced by ASE-RI to SEO Economic Research. SEO is a fully independent organisation since the 1980s and has a strong reputation in independent high-quality contract research. This explains partly the modest share of contract research. ASE-RI might consider whether increased contacts with industry/companies could generate more funds for PhDs and 'basic' research.

On the policy part, ASE-RI aims at improvement. It intends to formulate a systematic research policy on valorisation and societally relevant research. Indeed, current ASE-RI policy contains a limited number of instruments to enhance societal relevance. Obtaining third stream funding supports tenure, yet is not a very strong criterion in the tenure track system. Relevance to society is a topic in the annual reviews. However, ASE-RI lacks any structured policy and incentives are rather implicit. It may benefit from exploring best practices in this respect.

Viability

To discuss the viability of the unit the committee takes the self-evaluation report's SWOT analysis as a base. Generally, it appears that the unit is on sound financial footing and hence financial viability is hardly in doubt. Nevertheless, as the self-evaluation report notices, funding sources may be more limited in the future than they are today and hence proactive policies regarding acquisition of grants and contracts, as well as possible other financially attractive activities (possibly executive teaching) are essential.

As all economics and business units participating in this review, the ASE-RI management notices limits on compensation that can be offered to prospective researchers, which may be the result of either national or university regulations. The international academic market for economists is very competitive and internationally competitive salaries for excellent researchers exceed the maximum level of the senior professor scale by a wide margin. The unit (and Faculty management) rightly notes that salary is only one component that makes a work environment attractive; indeed creating an exciting, open and internationally visible research environment with excellent facilities is an important recruitment tool. Nevertheless in some cases, it may be justified to think creatively about monetary compensation that exceeds the usual scale limits.

In the discussion with Faculty management, it was noted that for senior administrative positions knowledge of Dutch is an important asset, since communication with administrative staff often requires the ability to read, write or speak Dutch. For a truly internationally oriented research unit, having leadership with a diverse international background is an important asset. Where possible, it may be worth putting effort in a further expansion of English as the communication language of choice.

Scientific viability has improved significantly through the measures taken. However, the imbalance in personnel structure and research time assignment caused by financial cuts remains a threat for the achieved level of excellence. Besides hoping for improved financial conditions in direct funding, the school might consider whether a slightly higher share of carefully chosen contract research could not be an opportunity rather than a threat for both viability and continued scientific quality and especially societal relevance.

The SWOT analysis mentions a 'lack of freedom to develop independent research agendas' as a threat. The school has clarified that this refers to the fact that research funding, both from the University of Amsterdam and from NWO, is increasingly earmarked for certain topics (Research Priority Areas, Top Sectors, etc.) which provides less space to develop fundamental or applied research that does not fit in these themes. Obviously, these are developments beyond the purview of the Faculty. The committee shares the concern that as a result of such policies research may lose flexibility and that one loses out on the best possible researchers if these don't fit a prescribed profile.

PhD programme

Over the review period, ASE-RI hosted an annual average of 46 PhD candidates (internal and external candidates combined). The average annual intake for the 2006-2010 period was 9 candidates (internal and external combined). 29% of the candidates from these cohorts managed to complete their projects within four years, while after five years 53% of the candidates had graduated, 4% had dropped out. Lead times have improved over the review period, partly as a result of the introduction of 2+3 PhD positions. Between 2008 and 2014, 67 PhD theses were completed, which equals an annual average of 9.6 theses.

PhD training has been delegated to the Tinbergen Institute. Most PhD candidates enter the programme after the 2-year TI MPhil programme and are appointed for a period of 3 years.

PhD candidates can be categorised into three types, depending on the source of funding: (a) internally funded candidates with a 3-year appointment, (b) externally funded candidates appointed for 3 or 4 years, and (c) self-funded candidates that hold employment elsewhere or have a scholarship from a (foreign) funding agency. All internally funded candidates, and a growing number of externally funded candidates, follow TI's graduate programme.

PhD candidates who wish to pursue an academic career are encouraged to participate in TI's Job Market preparation programme. This involved feedback to improve the CV and reference letters, and mock job seminars and interviews.

The committee notes that the PhD programme, operated in cooperation with Tinbergen, looks very professional and successfully run, all the way up to very good placement procedures for the graduates. According to information provided by the unit, during the period 2008-2014, 49 employed PhD candidates received their PhD. Of those, 13 were hired by the University of Amsterdam (7 as postdocs). The expressed intent is to not hire own graduates. Hiring about 27% of own graduates (even if most are postdocs) appears to be at variance with this expressed policy and is generally not advisable. Most others found positions at universities in the Netherlands and abroad. The non-Dutch universities are located in several European countries. No students got placed at universities in the US. During the PhD training several PhD candidates spent time at research organisations abroad and generally the unit is supporting this with modest amounts of money.

A worrying trend is the reduction in the number of internally funded PhD positions (only four in the coming years). These numbers are so low that the viability of the PhD programme is threatened.

Research integrity policy

UvA adheres to the principles of the VSNU's Code of Conduct for Scientific Practice. It has also formulated its own code of conduct, which is applicable to all staff and students. UvA's Ethics Committee (AIEC) advises the University Board on guidelines with respect to ethical issues. Confidential advisors are present at all of its Faculties, and a whistle blower scheme is in place. Research proposals and theses are subjected to integrity and plagiarism checks. An ethics committee has also been installed at the Faculty level (EBEC). University-wide guidelines for research data management (RDM) have recently been adopted but still need to be implemented at the Faculties and Institutes. ASE-RI will draw up its own RDM plan, as well as a planning for its implementation.

The committee has concluded that the unit largely follows research integrity polies of the university, while the Tinbergen Institute has assumed responsibility for research integrity training of PhD candidates. One element of that is the 'dilemma game'. Altogether the policies that are already adopted appear to be well thought through and adequately implemented.

8.3 Recommendations

Early in the reporting period, the Faculty faced serious financial issues, which for a number of years negatively affected opportunities for growth, both quantitatively and qualitatively. The Faculty has dealt with the problems decisively and successfully. The speed of the turnaround is impressive and currently, the research unit is on track for substantial further progress

towards higher quality and improved viability. The recommendations given here should assist in maintaining momentum.

Organisational structure. The organisation comes across as unnecessarily complicated, which partly may be a legacy of past mandates to structure research in research programmes. The committee recommends having a critical look at the organisation with the aim of simplification, e.g. by dropping some managerial layers, e.g. by integrating research programmes with departments.

Research allocation. Currently, the allocation of research time based on merit or career development for junior faculty members is relatively underdeveloped. The committee recommends implementing a further refinement of research allocation time, with particular attention for the need of junior tenure track faculty.

HR strategy. The unit has noted that within the Dutch direct funding stream, it is sometimes difficult to offer compensation packages that internationally competitive. The Faculty could further explore approaches to offering unusually high financial compensation to unusually outstanding researchers. One option would be to aggressively pursue endowed chairs. The unit sometimes hires its own graduates. The committee recommends instituting a strict policy of not hiring own PhD graduates.

Diversity. The gender balance of research staff in the unit is unsatisfactory. It is important and urgent to develop and implement effective policies to redress the gender imbalance at all seniority levels in the unit. To avoid barriers to managerial responsibility for non-Dutch faculty members, improve communication in English in administrative matters so that non-Dutch faculty members can more easily take on senior management positions.

Societal relevance. The committee recommends to formulate a systematic policy on societal relevance, which is consistent with the goal of high academic quality of research.

Funding. Consider new sources of research funding, including executive teaching, new forms of contract research, etc. Improve support for researchers identifying and applying for major personal grants.

PhD programme. The unit participates in the Tinbergen Institute, which appears to provide research training and supervision at a high quality level. It appears that the unit is reducing the number of available internal PhD positions. This is undesirable and the committee strongly recommends to increase direct funding for PhD positions.

8.4 scores

Quality	*Very good*
Relevance to society	*Very good*
Viability	*Very good*

9. Vrije Universiteit Amsterdam, Faculty of Economics and Business Administration

9.1 Introduction

Economics and business research take place within two separate research institutes at Vrije Universiteit Amsterdam (VU). Because policies are implemented at the level of the Faculty of Economics and Business Administration (FEWEB) the committee has decided to discuss strategy and targets and to assess 'Research integrity' at the level of the Faculty. The remaining SEP criteria will be assessed at the level of the two research institutes.

Organisation, leadership, strategy and targets

VU's Faculty of Economics and Business Administration consists of eight teaching/research departments and two research institutes: one for economics (Tinbergen Institute, TI) and the other for business administration (Amsterdam Business Research Institute, ABRI). Created in 2009, ABRI is modelled on the long-standing TI and intended to function as a stimulating research environment, as well as a Graduate School that provides (post) graduate training. In ABRI, FEWEB collaborates with the University of Amsterdam, and in TI with both the University of Amsterdam and Erasmus University Rotterdam.

Both research institutes cover six 'bottom-up' research programmes. For economics (TI) these are:

1. Strategic and Cooperative Decision Making;
2. Time Series Econometrics: Methods, Computations and Applications;
3. Economics;
4. Farms and Firms: The Microeconomics of Poverty, Risk and Development;
5. Spatial, Transport and Environmental Economics;
6. Finance.

For business administration (ABRI) these are:

1. Combinatorial and Stochastic Optimisation;
2. Accounting and Decision Making;
3. Strategic Entrepreneurship;
4. Marketing Strategy;
5. Human Resources;
6. Logistics, Information, Networks and Knowledge.

The Faculty Board is the highest administrative unit of the Faculty. It consists of the dean of the faculty, the research director, the director of education, the managing director, a secretary, and a student (non-voting member). The Board advises the dean, who is accountable to the VU Executive Board for all the faculty activities.

FEWEB's research mission is to make high quality contributions, both theoretical and empirical, to the fields of Economics and Business Administration that are relevant to the Faculty's educational activities. It firmly believes in research-driven teaching and also acknowledges that high quality research can impact policies and practices at firms, government and society in general.

FEWEB does not pursue a policy of ex-ante selection of research fields or -questions, but instead continually adjusts its resources. It is convinced that researchers themselves are

'naturally attracted to promising research questions and thrive in the stimulating environment of a successful research group'. It is thought that 'allocating research resources to a set of predetermined fields would suppress this mechanism, and would likely lead to lower overall quality and a lower probability of scientific breakthroughs'.

The main target for the reporting period has been to maintain and improve the quality of research. To this end, FEWEB has implemented new policies and fine-tuned existing ones. As part of FEWEB's strategy to reward success, staff members' research time is allocated on the basis of publication in high-impact journals. Quality is prioritised over quantity, which means that only the top five publications in the previous five years are counted. A new allocation system based on the Article Influence Percentile (AIP) was introduced in 2011. Until 2015, researchers could earn up to 60% research time; as of 2015, they can earn up to 50%. Staff members in the tenure track system are allocated 40% research time.

The Faculty Board also has guidelines for grant applications. Tenure-trackers must, for example, submit a Veni application to NWO as part of their tenure requirements. The criteria for promotion to associate professor specify that the candidate has to apply for funding from the ERC or NWO investigator-led schemes. Promotion to full professor is aided by securing an ERC or NWO grant. Researchers who are in the process of submitting a Vidi, Vici or ERC grant will be allocated extra research time for the writing process.

To recruit promising early career researchers and to provide them with opportunities for developing their careers, FEWEB has adopted a 6-year tenure track system. The number of tenure trackers has been growing. In 2008, there were six researchers in the tenure track system, whereas currently there are 44. The system is funded such that new tenure track slots are allocated to areas with growing educational needs, which ensures that research quality and education develop jointly in a balanced manner.

FEWEB aims for its research output to make a positive contribution to the public debate and to policy implementation, and therefore tries to monitor and report the direct scope and significance of the impact on the outside world. To promote and support contract research, the Faculty Board has established a seed-funding scheme, as well as a matching scheme to co-finance PhD positions and academic research projects with partner organisations from the public and private sector. Specific applied research centres also play a role in securing contract research.

FEWEB's strategy for the upcoming reporting period and beyond is to further improve the scientific quality and societal impact of its research. To maintain or slightly improve its quality rankings special attention will be given to the recruitment and funding of talented tenure trackers, and to increasing the number of postdocs. To increase its societal impact, the Faculty wants to intensify its activities with regard to entrepreneurship (ACE@VU) and postgraduate education. Also, it plans to introduce incentives for staff to design and participate in projects that apply their results. Departments that hire externally funded staff will receive a bonus and support by the public relations staff will be increased.

Resources

Of the two research units under review, Economics is the bigger one. Over the review period, its staff steadily grew from 55.0 fte in 2008 to 75.7 fte in 2014. At the same time, the research staff of the Business unit almost doubled in size, from 27.9 fte in 2008 to 54.0 fte in 2014. This was mainly due to a rapid increase in research staff numbers in the final year of the reporting period. FEWEB describes its recruitment strategy as increasingly international. The

number of staff members, including PhD candidates, from outside the Netherlands has increased from 58 in 2008 to 110 in 2014, or from 29% to 41% of the scientific staff. The Faculty also seeks to recruit, develop and promote female talent. In the allocation of research time and in the tenure track system, there are special regulations for maternity leave. Currently, 9% of full professors, 16% of associate professors and 36% of assistant professors are female.

The growth in staff numbers has meant that the Faculty's expenditures on staff have also risen. Direct funding has grown in absolute numbers, but not as a percentage of the total budget. In 2008, direct university funding paid for 65% of research staff fte's; in 2014 this was 61%. This means that FEWEB currently complies with VU's aim that Faculty's should generate at least 39% external income. Grant income and external funding for research have generally risen since 2008. In 2014, second stream funding paid for 16% of staff fte's, while third stream funding paid for 23% of staff expenditures. FEWEB expects its external funding to grow further in 2015, because some large research grants from NWO were awarded in 2014 and 2015. These funds will allow recruitment of more postdoctoral and PhD researchers.

Research integrity policy

The Faculty is putting in place a sensible and comprehensive set of policies meant to ensure research integrity, also in response to recent media exposure of dubious practices by a faculty member. Besides endorsing the VSNU Code of Conduct, in 2014 FEWEB organised several formal discussions. Internal and external seminars aim to provide a collegial assessment environment, such that improper research behaviour can be detected and discouraged during seminars and informal discussions. Research integrity has also been incorporated in PhD education, notably in the form of a dilemma game developed by EUR.

A VU-wide project that started in early 2014 and ends in 2015 is aimed at improving digital data management services for VU researchers based on policies and guidelines from VSNU, EU, funders and publishers. It will deliver a VU data management governance policy, the organisation of a VU data management support service and a VU infrastructure for archiving digital research data.

The committee found strong awareness from the management all the way down to PhD candidates both in terms of the issues, and in terms of the measures required for following the rules and dealing with suspected violations. The committee was impressed, for example, by the fact that some PhD candidates had been actively involved in defining and communicating these measures.

9.2 Assessment of SEP criteria Economics

Research quality

The committee's assessment of the quality of the unit's research is very positive. The unit conducts very good, internationally recognised research. A significant proportion of the work is published in very visible, high-quality journals. The research output evidenced by the key publications submitted is at the world frontier in such fields as labour economics and productivity analysis, firmly rooted in current literature, with strong empirical content and competently crafted theoretical work.

The quantitative material indicates that the number of academic publications per year was rather constant, with moderate peaks in 2011 and 2013. The average annual number of academic publications per tenured fte decreased slightly, while the annual number of refereed journal publications per tenured fte fluctuated around a stable level and the annual number of top journal articles per tenured fte increased, notably in the last two years of the reporting period.

The committee notes that these developments are consistent with the Faculty's stated goal of pursuing and rewarding excellence in research, also implemented by the new allocation system based on the Article Influence Percentile (AIP) introduced in 2011. FEWEB allocates resources for tenured faculty on the basis of proven quality. In particular, research time is reviewed annually on the basis of only the five best publications in the previous five years. As of 2015, it is capped at 50% instead of the previous 60%. While this might slow down the recent excellent growth of quality research output, the committee understands that department heads are in a position to exercise some discretion in assignment of teaching and applied research duties, in a cultural climate of reciprocal competence-based respect, and appreciates the shared research values and well-understood criteria that make it possible for the unit to share workloads and reward productive researchers without triggering resentment. Similarly, tenure track faculty are assigned only a nominally low 40% research time, but the research unit's management is aware of the need to protect their research potential in order to attract new high quality junior faculty despite fierce international competition.

Overall, 32% of the article output was published in top (AIS≥80) journals over the assessment period. In 2014 a particularly high 44% of journal articles appeared in top journals. The CWTS bibliometric benchmark study indicates that FEWEB's mean normalised citation score (MNCS), combined for Economics and Business Administration, was the second highest of the participating units after Utrecht University. The same holds for the proportion of publications belonging to the top 10% most highly cited papers (PP Top 10%).

FEWEB's income from research grants increased during the review period, both in actual size and in proportion to other funding streams. External research funding amounts to a very respectable 40% of total research funding, on average over the review period. The committee understands that shortly after the end of the reporting period a number of important grants were awarded to Economics researchers. The committee understands that these favourable developments reflect not only the quality of the unit's personnel but also the incentives provided by tenure and promotion criteria, which take into account the candidate's ability to secure outside research grants, as well as the relatively low overhead and flexible administration for externally funded research.

The CWTS statistics and the research income information signal a very solid research quality, which has grown impressively. The committee notes that neither can be disaggregated across the Economics and Business research units, as would have been appropriate for the purpose of this assessment.

Relevance to society

The self-assessment report states that societal impact is recorded and rewarded informally as a natural by-product of scientific research, enhanced by efforts to obtain external funding (also for PhD candidates). This appears an appropriate strategy.

The activities listed in the report and the five key societal publications submitted show a suitable combination of competent research methods and topical practical issues, ranging

from fringe benefits taxation, to competition policy, to programme evaluation, to sovereign default risk, to global warming and renewable energy subsidies.

Like the more purely academic output, these contributions stand out for their rigor and clarity (rather than clever originality); this arguably makes them all the more useful in societal discourse. FEWEB Economics has contributed methods for short-term economic growth indicators, and in the educational sector (student assignment to high schools, education impact analysis programmes). Other topics include firm data protection in European statistics, and some models for pricing and risk analysis in different sectors. FEWEB Economics shows a very good record on valorisation and quality of societal relevance.

Many such results are embedded in significant contract research activities, or linked to advisory roles to institutions in the fields of European finance or international health economics. FEWEB Economics' substantial list of contract research covers a broad range of relevant societal topics. The impact on society is good.

The self-assessment report pays relatively little attention to FEWEB policies that enhance societal relevance. In the interviews several policies and incentives were mentioned that appeared to be operational, such as holding a strategy session with department heads on societal relevance, valorisation as a separate criterion in tenure track, some financial compensation for the overhead associated with contract applications, and guidelines for contract research that emphasise the synergy with fundamental research, which is required.

Moreover in the new strategic plan for the university as a whole FEWEB plans to introduce incentives for researchers to design and participate in projects that apply their results. Societal research grants on applied topics of local interest are a promising idea. It is planned that FEWEB will make substantial amounts (in the order of several 10,000 euros) of such funds available to some researchers who fall below the criterion for 20% basic research time. This money can be used for choosing and running societally relevant projects, for example routing of ambulances. Those projects could eventually trigger basic research. These initiatives will mean that in the future FEWEB will pay more attention to societal relevance than before.

Viability

The committee concludes that FEWEB Economics' strategic tools (in particular the research incentive schemes and promotion criteria) are perfectly adequate to support continued success in achieving its objective of producing high-quality theoretical and empirical contributions to fields that are relevant to the Faculty's educational activities. Solid leadership, a climate of reciprocal respect, and an appropriate institutional structure have made it possible to achieve those objectives fully in the current review period. The SWOT analysis is very sound and informative.

Overall VU Economics shows excellent viability. Nevertheless, the committee proposes to consider some aspects that may be further improved. The research programmes were coherent with the old SEP, but currently play a loose and in some respect unclear coordination role. This structure does not appear to be consistent with the strategy, which the committee strongly supports, of allocating resources on the basis of individual research achievement on individually chosen research topics. The research programmes should probably be streamlined, or eliminated altogether, in order to ensure that research objectives and resources are appropriately taken into account within a governance structure where personnel largely reports to teaching-oriented departments.

For the decentralised bottom-up strategic approach to continue to produce the very good results observed during the review period, individual researchers need to react proactively to internal incentives and outside research stimuli. Because suitable selection and retention of faculty members and a harmonious internal climate will be essential for continued success of this relatively passive, hands-off leadership style, these and other elements of the research strategy will naturally need to be closely monitored over the assessment period.

Tenure slots are linked to the needs of current and newly designed teaching programmes, a robust and plausible funding source. The formal employment conditions of junior faculty contracts already appear quite adequate, but further improvement of the research organisation and research environment would be necessary to remove the 'difficulties in attracting assistant professors that are better than FEWEB's own job market candidates' mentioned by the self-assessment report.

At higher levels of seniority the age distribution and rank structure of the research unit do not threaten the viability of its personnel policies. However the unit's personnel policies may need to be monitored, and if necessary fine-tuned, to ensure on the one hand that the projected tenure track success rate of 60-80% is indeed achieved, on the other that it will be possible to promote deserving faculty members to higher levels of seniority.

Both when assigning duties to current faculty and when making offers to new hires, the research unit should aim at ensuring that the best researchers can count on protected research time. This can be a strong instrument for hiring or retaining top researchers, especially in light of the fact (noted as a weakness in the self-evaluation report) that the university salary structure limits options for competitively bidding for the best researchers. A well-organised and cohesive research unit should be able to offer better research conditions as well as higher salaries in special circumstances, in addition to extra housing costs, relocation costs and aid in finding jobs for spouses (than are in place today).

An aspect that deserves attention is faculty diversity, especially but not only along gender dimensions. The committee understands that while no special policies are in place, the dean's portfolio includes duties as diversity officer and that, while for a variety of reasons the gender composition of the Faculty is still unbalanced at the higher ranks, five female full professors are currently joining the faculty. Continued progress in this direction should be closely monitored.

The recent renovation of office spaces is an opportunity for the unit's viability but perhaps also a threat because a shift to mostly open and unassigned workspaces might either increase or decrease incentives to spend time with colleagues. In practice, interviewed staff at all levels of seniority expressed very positive views on the new office space arrangements, which appear to be significantly enhancing opportunities to interact with colleagues and familiarise with each other's research. Further evolution should be monitored closely to ensure that facilities continue to foster a suitable research environment. In a similar vein, it will be important to ensure that a recent increase in research personnel's administrative burden is only temporary and does not unduly hinder their research performance.

PhD programme

FEWEB offers 3- and 4-year PhD trajectories. Annually, it has been admitting about six directly funded PhD candidates who have completed the research master's programme offered by Tinbergen Institute. Usually they receive a 3-year contract. The Faculty also hosts PhD candidates who work on externally (NWO-, EU-, or industry-) funded projects and are

usually appointed for a 4-year period (depending on previous education). Over the review period, FEWEB Economics hosted an annual average of 31.6 PhD fte's (internal and external candidates combined). The average annual intake for the 2006-2010 period was 11.6 candidates (internal and external combined). 38% of the candidates from these cohorts managed to complete their projects within four years, while after five years 57% of the candidates had graduated, 10% dropped out. Between 2008 and 2014, 78 PhD theses were completed, which equals an annual average of 11.1 theses.

The PhD candidates in economics take part in the training programme offered by the Tinbergen Institute, which is discussed in a separate chapter in this report. Candidates who enrol in the PhD programme after a regular master's programme have to complete a course load of 30 ECTS from the TI research master's programme. PhD candidates are supervised by one or more supervisors, most of whom are TI fellows. At the start of the project, the candidate and the supervisor(s) draw up a training and supervision plan. PhD candidates are university employees and are evaluated by the supervisor using a university-wide HRM instrument. The Dilemma Game was recently introduced in the MPhil programme to offer insights and training in research integrity policies. However, PhD candidates who had already passed the MPhil level have not been asked to play it. The Tinbergen Institute and the Department cover costs for travel at the same level as other units (€4500 over the PhD programme) and additional funding is awarded competitively by a separate funds. The teaching load can vary between individuals and over time, and can be compensated when it exceeds the normal 10-15% time. Visits by external researchers seem to be constrained by limited funds.

Almost two-thirds of economics PhD graduates pursue an academic career, 20% finds employment in industry and a further 15% in the public sector. Preparation for the labour market and career counselling is being assigned to TI. Non-TI PhD candidates have to rely on the networks of their supervisors. Among the large number of new graduates some found their first jobs in excellent institutions (including Northwestern University and University of Chicago) but many were hired by VU itself (26% of the total, and 49% of those who obtained academic jobs). This outcome in principle should be exceptional but appears not to be in practice.

In the committee's view, the organisation of the Tinbergen Institute-based PhD programme (3-year PhD candidate appointments to research master's students, centralised monitoring, common seminar attendance and presentation requirements, and institutionalised placement services) adheres to internationally excellent quality standards. Potential problems may arise from its coexistence with 4-year positions (including some Research Qualification coursework) for students who hold a 1-year MSc, i.e. the type of positions for which selection, supervision, and placement were traditionally performed by individual faculty members. The committee understands that, in practice, within the Economics unit the PhD programme is substantively homogeneous. During the interviews all those questioned, including PhD candidates, replied that in Economics all PhD candidates are granted the same freedom in pursuing their individual research and are subject to the same quality standards, regardless of whether they are internally or externally funded. However it seems that some PhD candidates (particularly those that are externally funded) only or mainly interact with a single supervisor even though formally more than one is appointed. Because this limits their development and placement opportunities, the committee feels that at least two faculty members should always be actively involved in each PhD candidate's supervision (one main supervisor and at least one co-supervisor). The committee also feels that the Dilemma Game should be offered to all existing PhD candidates at all levels.

9.3 Recommendations

The committee concludes that the research produced by the unit is very good overall and excellent in some key areas. It makes scientifically sound contributions to the analysis of topics of substantial societal relevance, and fulfils the objectives of the units' stated strategy. The unit's PhD programme and institutional structure are capable of ensuring high-level professional training and a high degree of research integrity. The viability of the unit's research strategy is ensured by clear implementation of suitable personnel policies; research guidelines that appear fully adequate to ensure integrity of research procedures; and an effective leadership style based on creation of a research environment that guides and rewards individual and groups by bottom-up research initiatives. Early and sound implementation of the tenure track system has allowed the unit to develop strongly over the assessment period, and the committee understands that it will continue to be implemented on the basis of a single 6-year temporary contract.

The committee recommends continued attention to all the aspects reviewed in the previous paragraph, and additional attention to:

PhD programme. The PhD programme deserves to be nurtured and further developed: to achieve an efficient scale of operations it is important to continue to exploit and where possible expand opportunities for cooperation and adoption of best practices, both with other institutions and across fields within FEWEB.

Diversity. Diversity issues do not yet appear to result in suitably diversified representation (especially at the higher steps of faculty careers) and would require specific policies and procedures beyond those already in place.

Organisational structure. The unit would benefit from some streamlining of the research programme structure, which does not appear to be fully operational and is not at this stage fully consistent with the unit's continual adjustment research strategy. The question indeed is if research programmes have any role to play within the bottom-up philosophy of the unit.

HR. The committee strongly recommends to institute a strict policy of not hiring own PhD directly after graduation. Newly minted PhDs should pursue a career elsewhere for at least a number of years before the can be considered for a position at their alma mater.

Facilities. Problems may arise from the recent and so far successful renovation and reorganisation of office space, and from a current redefinition of faculty members' administrative responsibilities.

9.4 scores

Quality	*Very good*
Relevance to society	*Very good*
Viability	*Excellent*

9.5 Assessment of SEP criteria Business

Research quality

The committee notes that FEWEB Business has developed a very strong strategy to improve the quality of its research in the reporting period, with already very substantial impacts. This

strategy includes a well thought-out incentive system for top publications and top grant acquisition.

The productivity goals and strategy are well-defined, with strong incentives for top quality publications and top grants in the tenure track, for senior faculty. A clearly defined award system in terms of research time, additional research budgets, and promotion criteria is in place, as is practical assistance.

In summary, the committee was very impressed with the excellence of the strategy, as well as with the outstanding leadership and team spirit in its execution.

While the overall number of publications has grown proportionally to the research staff, the total number of top publications more than tripled during the reporting period, and the number of top publications per tenured fte roughly doubled. On average, 32% of journal articles appeared in top journals (AIS≥80). Top publications have appeared not only in top Business journals such as *Academy of Management Review/Journal*, *Organisation Science*, *Journal of Management*, *Journal of Marketing Research*, *Management Science*, and *Strategic Management Journal* (all with a top 5% Article Influence Score), but also in interdisciplinary journals at the same quality level, e.g. in mathematics and bioinformatics. In terms of citation impact, the CWTS benchmark analysis shows VU (economics and business together) in second place within the Netherlands and just outside of the top 10 of European benchmark institutes. The committee considers this a very good performance, and is confident that continued quality emphasis will improve the scores further, as already indicated in the last three years of the period.

In the last years, FEWEB as a whole has managed to get an impressive number of large and prestigious NWO grants, growing the funding share from 11 to over 16% in the last three years, where one has to note that this percentage growth comes on top of a 40% budget growth. In the recent past, FEWEB also successfully applied for NWO Veni grants, and has actively incentivised such applications. In addition, while the percentage level of contract research remained more or less constant at its previous high level of roughly 25%, its quality has been significantly improved by a strict 'no consulting' policy that ensures that contract research contributes to research quality rather than deviating from it. At the same time, this high share gives additional evidence of research relevance beyond citation quality. While, in citation quality FEWEB is among the top-dozen European schools, the overall reputation of the business sector lags behind this positive development as is normal in such situations; still the Management sector achieves a rank among the top-20 European schools.

As can already be seen from the above discussion, the committee considers the organisation and internal processes as well as the resource situation and trend generally very good to excellent. However, in contrast to the hiring situation at the junior level that seems internationally competitive, hiring top senior researchers remains difficult according to the Faculty Management despite the attractiveness of the location, due to the large salary differences with international top schools. The committee recommends looking into possibilities to overcome this barrier, in order to be able to reap the full benefits of scientific leadership with respect to the excellent young faculty without exceeding control spans.

Relevance to society

FEWEB is responsible for the strategy and policy on societal relevance. This covers both VU Economics and ABRI. The section on VU Economics above argues that FEWEB performs very well in these respects. In addition, over the review period ABRI invested in greater visibility in the Amsterdam region. It introduced a journal for more applied work.

Important societal impact areas for the business section are focussed around social issues and include demographic aspects of worker motivation, new career frameworks, novel approaches to more commitment to and from organisations, or the role of social capital in start-up success. The committee notes that there are also some valuable and highly cited contributions at the border with engineering management, an area of growing importance in which VU has not been that active in the past. The research group has an extensive network of external industry partners, who also function as a source of empirical data.

In addition to the more general societal relevance issue, various centres (co-)founded by the business departments, offer a good infrastructure for significant contract research and empirical cooperation with well-known companies in different economic sectors. Judging from the data on sources of funding, ABRI has had considerable success in attracting funding for contract research. Also, several faculty members have accepted important senior advisory roles in national and European business networks, mostly in areas that are of great importance to the Netherlands, such as transport, healthcare, marketing, and banking. Moreover, ABRI disseminates recent research insights in society through its extensive programme of postgraduate education (2000 students). Also PhD candidates clearly recognise the importance of valorisation.

The committee has found that ABRI is quite aware of the need for synergy between societal relevance and research quality. In one way or the other, societal relevance has to feed back into basic research. Access to unique company data constitutes a major feedback mechanism. This awareness can be found throughout ABRI, as is evidenced by the management's statement that ABRI does not do consulting, but only accepts projects that have scientific quality.

Overall, the committee notes that some of the new impact-related policies have yet to have their full effect, but there is already evidence of significant engagement with industry, government and societal organisations. It appears that the unit is heading in the right direction and that future progress on relevance and valorisation can be anticipated.

Viability

FEWEB Business has developed, and is executing, a quality strategy with a future-oriented flexible incentive-based research planning approach. The intermediate results are very promising and there is no reason to believe that the positive dynamics created in the reporting period will come to an end. The SWOT analysis is clear and realistic, and communicated and agreed with all levels in the research institute, showing as the only major weakness the question of internationally competitive senior salaries.

Concerning diversity, unusually for the field, more than half of the doctoral candidates at FEWEB (combined percentages for economics and business research) have been female, about 25% of assistant and associate professors, and 17% of full professors. Tenure criteria are based only on the best publications of the authors, leading US academics have advised on how to successfully aim high, and hiring has moved from the regional to the international market for young researchers.

FEWEB business has dealt very well with the problems of direct funding in the early part of the period in two ways. Firstly, the continued growth in student demand should ensure a strong first funding stream situation even in a future of demographic change. Second, the recent focus on excellent junior faculty hiring at the international level is likely to lead to

continued growth in international scientific standing, productivity, and impact in the future. Due also to their continued strength in quality contract research and societal relevance, as well as growing success in grant acquisition, financial stability and expertise in the institute its viability can be considered excellent.

PhD programme

There are three different categories of PhD candidates in Business Administration and Management. Annually, The ABRI Board admits six directly funded PhD candidates who have a research master's degree or have completed an equivalent programme. They are employed for a period of three years. A second category of PhD candidates works on externally (NWO-, EU-, or industry-) funded projects. These students are selected by their future supervisors and usually receive a 4-year contract. Lastly, there is the category of external/part-time PhD candidates who are not employed by the faculty but work on their PhD project in their own time. They commit themselves to devoting at least 15 hours per week to research and course work (30 EC over the course of the project).

During the review period, the Business Administration research institute hosted an annual average of 15.9 PhD fte's (internal and external candidates combined). The average annual intake for the 2006-2010 period was 6.4 candidates (internal and external combined). 31% of the candidates from these cohorts managed to complete their projects within four years, while after five years 56% of the candidates had graduated, 12% dropped out. Between 2008 and 2014, 66 PhD theses were completed, which equals an annual average of 9.4 theses.

All research training of PhD candidates in Business Administration and Management is organised within the Amsterdam Business Research Institute (ABRI), which was established in 2009 and first evaluated in 2013. This institute offers formal research training programmes for full-time and part-time PhD candidates as well as a dedicated set of courses intended to prepare junior researchers and master's students (honours students) in Business Administration and Management for PhD research. The formal training programme involves a tailored package of courses taught by ABRI Faculty, including advanced data analysis and courses on transferable skills (such as writing and presenting, and career development). PhD candidates can also complete courses and obtain credits from national graduate schools or research networks.

PhD candidates are supervised by at least two supervisors. At the start of the project, the candidate and the supervisors draw up a training and supervision plan. The Faculty's Scientific Committee judges the content and feasibility of the project. ABRI's director of doctoral programmes reviews the training and education part and ensures that all proposed courses are systematically reviewed by the ABRI curriculum committee. After the first year, the candidates' progress is assessed by the supervisor using a university-wide HRM instrument. Following a positive result the contract is extended for the remaining two or three years. A more formative and developmental assessment takes place after two and a half years.

The self-evaluation states that ABRI offers 'excellent job placement prospects', because of the extensive networks of its staff. While the committee is pleased with the results in terms of graduate placement, it does feel that a more institutionalised system of career counseling should be favoured over the rather informal current arrangement of relying on supervisors' networks. 61% of business PhD graduates pursue an academic career, 30% finds employment in industry and a further 9% in the public sector. A significant share of ABRI graduates (26%)

was hired for junior faculty positions during the reporting period. The committee was told that this practice will change in years to come, as a result of the overall shift in strategy.

The committee concludes that the PhD programme is still in a transition phase, implementing the aim of supporting top-level international candidates with top-level structured education, excellent supervision, and early support in top publications and top placement. In most areas ABRI already reached a very good level, but there still remains some legacy-based heterogeneity. The new research master's programme, which is expected to add more quality to the PhD education, has just been started. The committee believes that the unit is on the right track towards reaching the excellent level Economics has had for a long time due to the Tinbergen Institute.

9.6 Recommendations

The committee concludes that ABRI's strategy, leadership and resources allocated to research quality are excellent. This strength has resulted in a SWOT, strategy and a resulting robustness and stability that may lead to excellent viability of VU Business. Progress on the new research master's programme is good but its late development leaves the PhD organisation still to be proven.

Quality strategy. The department is strongly encouraged to maintain its strict focus on research quality, including the strongly international orientation of faculty and PhD candidate hiring processes, as well as the quality orientation of contract research. Moreover, like other departments in this evaluation, the Business department should aim for new ways to strengthen the competitiveness in hiring top international talent at the senior faculty level. This even more so, as the overall financial situation from both a student number perspective and a third-party funding perspective should help arguing for such a strategy in the school and the wider context.

PhD programme. The recently started joint research master's programme with UvA offers major opportunities for excellence in the ensuing PhD programme. However, attention should also be focused on early and systematic preparation of PhD candidates for attractive job placements, taking into account the specific international hiring customs across markets (e.g. aiming early for a top-level single-authored job market paper).

HR policies. The committee strongly recommends to institute a strict policy of not hiring own PhD directly after graduation. Newly minted PhDs should pursue a career elsewhere for at least a number of years before they can be considered for a position at their alma mater.

Diversity. Diversity issues do not yet appear to result in suitably diversified representation (especially at the higher steps of faculty careers) and would require specific policies and procedures beyond those already in place.

9.4 scores

Quality	*Very good*
Relevance to society	*Very good*
Viability	*Excellent*

10. Tinbergen Institute (TI)

10.1 Introduction

Tinbergen Institute (TI) was founded in 1987 by Erasmus University Rotterdam (EUR), Vrije Universiteit Amsterdam (VU) and the University of Amsterdam (UvA) to jointly offer graduate training to junior faculty pursuing a PhD at these three universities. The mission of TI is to offer an MPhil Programme and PhD training in economics, econometrics and finance comparable with the best Graduate Schools in these fields, and to facilitate and stimulate fundamental and applied economic research that meets the highest international standards.

TI is mainly financed by the three founding Faculties. Staff members of these faculties can join TI as fellows and teach in the MPhil. The membership criteria are defined based on publication track record. Currently, TI has over 150 research fellows, organised in eight TI research programmes. EUR acts as coordinator of the Tinbergen Institute.

In its assessment of TI, the committee has chosen to follow the *Handreiking kwaliteitsbeoordeling onderzoekscholen* (SODOLA/VSNU, 2014) and focus on:

1. the administrative effectiveness of the institute;
2. the scientific quality, as shown by the PhD training and supervision, and cross-border research cooperation.

10.2 Assessment of criteria for interuniversity research schools

Administrative effectiveness

The committee notes that TI has been set up with sufficient independence to enable it to define a joint strategy. The Supervisory Board of TI has two outside members and three members of the participating faculties (typically the research directors). The board members are appointed by the Deans of the faculties. The 2010 evaluation report of the international peer review committee ('Blundell report'), which was an essential part of the previous application for re-accreditation as a research school, suggested to make sure that TI is involved in all appointments, in order to enhance the link between TI and new hires. This recommendation does not seem to have been implemented. The committee understands that there is currently a discussion about the governance of TI. For TI to achieve its unique responsibilities as an interuniversity research school, independence and control over crucial instruments is important.

Since 2012 a renewed TI research fellowship charter defines requirements, tasks and benefits of TI members (candidate fellow, research fellow, programme leader, honorary or associate fellow). It clearly stipulates that junior and research fellows should mention the TI affiliation in publications, CV's and homepages. This is not always done, even though some fellows have 'improved' their behaviour in this regard. Some increased attention to TI branding is justified.

The publication criteria for fellows focus on the Article Influence Scores (AIS) of journals. The committee was told that discussions on journal lists no longer take place. This also smoothens the admission to the TI status, thus broadening the support of fellows and hopefully their faculties and increasing the size of the pool of teachers. Only TI members are allowed to teach in the joint graduate programmes.

The three funding faculties mainly finance TI. Each of the participating universities has annually allocated funding that is used for management and administration of TI, conferences, lectures, research seminars, workshops, PhD travel, printed editions of theses, and job market activities. Complications around an earlier financial grant (now finished) make the TI management somewhat hesitant to find additional funding. Some other activities (e.g. summer schools) may provide more funds. But little concrete progress on this has been presented to the committee.

TI has its own administrative staff, general director and director of graduate studies. TI appears to be well managed (e.g. dynamically updated website, TI newsletter, magazine, seminars, conferences, support of students, etc.). The internal organisation is well designed and complete, with few unnecessary layers. Coordination between the eight research groups and promoting interaction between teaching and research is the responsibility of the research council, made up of the TI programme leaders. The educational board discusses outcomes of evaluations of exams, lectures and courses, as well as results of the annual student reviews. A focus hereby is also on the cooperation between teachers, the transition from core courses to electives and the workload for students.

Apart from the importance of efficient and independent governance, the availability of sufficient funds to carry out its tasks is a necessary condition for sustained success. It appears the funding for PhD positions at the three participating universities has come somewhat under threat. This may negatively affect the attraction of the best students in the PhD programmes, since the MPhil programme is competing with some of the best Graduate Schools.

Scientific quality

The committee notes that TI's goal is to continue to be among the leading institutes in economics in Europe and among the top 25 Graduate Schools in the world. The model used for this is a combination of network activities (by fellows) and top level research and graduate training. The list of TI publications indicates that the research of fellows is of an internationally outstanding quality. TI uses a clear commitment to absolute top journals and high impact journals (measured by AIS). Very good publications are a necessary condition for fellow membership. But the sizable increase in the number of TI research fellows has not (yet) had a visible impact on the number of absolute top journal articles. For further information regarding the scientific quality of TI's research, the committee refers to the scientific quality assessments of the participating research units at EUR, VU and UvA in earlier sections of this report. Below, the committee presents its findings on the TI PhD programme and on the cross-border research cooperation that was initiated by TI during the reporting period.

PhD training and supervision

The committee notes that TI's graduate programme consists of a 2-year MPhil (to which an annual average of 29 students was admitted during the 2010-2014 period) and a 3-year PhD programme (to which an annual average of 19 MPhil graduates were admitted during the 2007-2011 period). There are two tracks: the (more established) Economics track and the (newer) Finance track. After a first year consisting of common core courses, students select specialisation courses from a wide range of fields in the second year of the MPhil. The programme is a first step to PhD thesis research that usually takes place at either of the participating faculties. The MPhil thesis supervisor is preferably also the PhD thesis advisor. The faculties also employ non-TI PhD candidates who have completed a regular, 1-year master's programme. These candidates are usually appointed for a 4-year period. In the first

year of their appointment they usually take courses from TI's MPhil programme to correct any existing deficiencies. In response to a recommendation in the Blundell report and to a specific request by EUR, in 2012 TI established the 'Research Qualification' (RQ), which is a structured programme of core and field courses (40 EC) designed to give 4-year PhD candidates a solid background in economics and econometrics. In the 2010-2014 period, ESE has had the largest number of 4-year PhD candidates (36) and the smallest number of 3-year PhD candidates (29) of the three participating Faculties. All of ESE's 4-year candidates have to complete the RQ.

The structure and content of the TI programmes fully adhere to excellent international standards

The added value provided by the TI after students enter the PhD programme at participating universities results to a large extent from the critical mass that TI offers. This threshold is composed of a sizeable number of motivated TI fellows, with excellent international publication records, and a wide exposure to research by international top level scholars in seminars, workshops, conferences, and symposia. All of this provides the Ph.D. students with a unique environment that enhances their chances towards achieving excellence in their own work .

With regard to the quality of students enrolling at TI, the committee notes that the % of MPhil students with highest GRE quantitative test scores (above 90) has decreased over the review period. TI itself is also surprised by this tendency but does not see relevant repercussions on students' performance and the programme. It continues to attract around 230 applications per year, admitting only around 29. It appears to the committee that this change mainly reflects a change in the admissions process.

Passing a threshold value for the analytical part of the GRE test was found to be a better predictor of success in the programme than the score on the quantitative part. The exact score on the GRE score started therefore to play less of a role. At the same time more weight was given to characteristics such as motivation, creativity, social skills and alternative offers. Information on these was obtained via telephone interviews.

The change in approach left the number of applicants unaffected, led to a jump in the 'rate of return' on offers made and to an increase in the expected quality of admitted students.

The committee further notes that TI follows up on students who declined an offer of admission. This exercise reveals that the institute is actively competing with other top graduate schools in the US, the UK and the rest of Europe. Current PhD candidates who chose TI cite factors such as the location of the faculties; the smooth transition to PhD from MPhil; the thorough training through MPhil courses; the relatively large size of TI (currently around 150 fellows), which enlarges the set of possible (area, supervisor) choices; the reputation of scientific excellence; and the help students get in finding a good match with a supervisor and a job after PhD graduation. For some students TI has a reputation of being 'hard' on them. But the committee found that TI's educational board appears to be open to changes proposed by students, for example in cases where the workload of a course is perceived as unreasonably high.

The share of MPhil students going to one of the three member faculties shows important changes during the 2008-2012 period. This partly reflects budgetary concerns and consequent reductions in PhD positions offered. One or more faculties may temporarily compensate for

reductions in another, a clear benefit of having a cooperative interuniversity institute. According to the committee, asymmetries between the three participating faculties are unavoidable, if only because of history, size, 'cultural' and locational differences. Nevertheless, the committee has found that there are differences in the level of support across the funding universities that merit attention. For instance, the self-evaluation report mentions that fellows of EUR are less visible in the TI's MPhil programme, which is thought to be 'due to perceived slim chances to find students willing to take up PhD research in Rotterdam (…) and the ease with which PhD candidates can be recruited from local MSc programmes'. During the interviews, it was also mentioned that of the three universities, EUR is the only one not compensating faculty members for teaching in the TI programme. Upon verifying this with ESE, this appears to be incorrect. EUR faculty members are compensated for teaching within TI on the same bases as for any other teaching. This suggests the need for added communication to faculty members. In response to the observed imbalance, TI has started a policy of having each course taught by two fellows, one from EUR and one from one of the Amsterdam universities.

Joint TI seminars are well attended in some areas and TI-wide group research days tend to improve upon the synergies provided by the TI, but the committee has found that joint seminars and activities are more frequent between the two Faculties within the same city. The committee also notes that new developments in a joint business research master's programme at the two Amsterdam faculties may provide new opportunities to realise additional economies of scale and scope with the TI and the Rotterdam faculty.

The 4-year PhD graduation rates of TI have decreased from high levels to perhaps more steady state values. TI is beginning to provide extensive support for job market preparation. This is highly appreciated by PhD candidates and may be expected to result in further improvement of placements: those that took place over the review period have been always more than satisfactory and often very good or excellent for students who transfer from the TI MPhil programme.

Cross border research cooperation
The committee concludes that TI's conferences, seminars, workshops, lectures, publications are at a world-class level and regularly involve joint efforts of participating faculties. In some areas the interaction with other member faculties is more frequent than in others, which to some extent may be unavoidable. Almost all these activities are carried out in an international context and in cooperation with international research groups and scholars. In the spirit of the Tinbergen tradition, topics chosen are in line with societal concerns and problems. Some of the TI research groups focus on interdisciplinary approaches.

10.3 Recommendations

TI has realised the critical mass to make a difference in economics graduate education, world-class scientific research, and knowledge transfer. However, more challenges lie ahead to realise further economies of scope; to realise the advantages of having different 'products' under a joint governance. TI already coordinates research and graduate teaching in several areas. In the future, the TI umbrella may also cover high-level graduate education programmes in economics and business.

The committee offers the following recommendations:

Interfaculty cooperation. Try to find ways to make sure that asymmetries and differences of member faculties are sources of inspiration and cooperative strength (rather than sources of

conflict). It is of particular importance that the cooperating faculties maintain their commitment, both in terms of financial support and in the number of PhD candidates they commit to.

Branding. Continue efforts to make sure that members of TI add their affiliation to publications and other outputs.

Organisational structure. Make sure that the governance structure of TI remains as independent as it currently is. The committee feels that any attempts of the funding institutions to exert more influence on TI decision-making would undermine its scientific credibility.

Balance between institutions. It appears that the two Amsterdam Faculties benefit more of the TI infrastructure (for instance get more students from the TI MPhil programme) than EUR. This is an area of concern, which may require targeted actions to redress any imbalance between the three institutions in the resources each contributes and the benefits each derives from the joint programme.

Funding. For TI to accomplish its mission sufficient and stable funding is essential. A renewed active search for outside funding will be needed.

Appendices

Appendix 1: Explanation of the SEP criteria and categories

The Standard Evaluation Protocol 2015-2021 asks review committees to assess three criteria:

- Research quality:
  - Level of excellence in the international field
  - Quality and Scientific relevance of research
  - Contribution to body of scientific knowledge
  - Academic reputation
  - Scale of the unit's research results (scientific publications, instruments and infrastructure developed and other contributions).

- Relevance to society:
  - quality, scale and relevance of contributions targeting specific economic, social or cultural target groups;
  - advisory reports for policy;
  - contributions to public debates.

The point is to assess contributions in areas that the research unit has itself designated as target areas.

- Viability:
  - the strategy that the research unit intends to pursue in the years ahead and the extent to which it is capable of meeting its targets in research and society during this period;
  - the governance and leadership skills of the research unit's management.

Category	Meaning	Research quality	Relevance to society	Viability
1	World leading/excellent	The unit has been shown to be one of the most influential research groups in the world in its particular field.	The unit makes an outstanding contribution to society	The unit is excellently equipped for the future
2	Very good	The unit conducts very good, internationally recognised research	The unit makes a very good contribution to society	The unit is very well equipped for the future
3	Good	The unit conducts good research	The unit makes a good contribution to society	The unit makes responsible strategic decisions and is therefore well equipped for the future
4	Unsatisfactory	The unit does not achieve satisfactory results in its field	The unit does not make a satisfactory contribution to society	The unit is not adequately equipped for the future

Appendix 2: Curricula vitae of the committee members

Arie Kapteyn (chair) is a Professor of Economics and the Executive Director of the Dornsife College of Letters Arts and Sciences Center for Economic and Social Research (CESR) at the University of Southern California. Before founding CESR at USC in 2013, Kapteyn was a Senior Economist and Director of the Labor & Population division of the RAND Corporation. Before joining RAND, Kapteyn was Professor of Economics at Tilburg University in the Netherlands. Next to being a professor he held several administrative positions at Tilburg University, including Dean of the Faculty of Economics and Business administration, Director of CentER (which he founded), Director of CentER AR (a public policy research institute) and CentERdata (a survey agency specializing in Internet interviews). He has been visiting professor at numerous universities and institutes across the world. Much of Kapteyn's recent applied work is in the field of aging and economic decision making, with papers on topics related to retirement, consumption and savings, pensions and Social Security, disability, economic well-being of the elderly, and portfolio choice. He is a pioneer in the development of new methods of data collection, using the Internet and mobile devices. Kapteyn received an MA in econometrics from Erasmus University Rotterdam, an MA in agricultural economics from Wageningen University, and a PhD from Leiden University, all in the Netherlands. He is a fellow of the Econometric Society. For his scientific work, in 2006 he was awarded a knighthood in the order of the Netherlands Lion.

Giuseppe Bertola is a Professor of Economics at EDHEC Business School since 2011. Ordinario di Economia Politica, Università di Torino since 1996 (previously Associato, currently on extended leave); Full-time professor at the European University Institute (1997-2003); Assistant Professor and Assistant Director of the International Finance Section at Princeton University (1989-93). He has performed scientific advisory work for the European Commission, the European Central Bank, and other organizations. His research is published in *Review of Economic Studies*, *American Economic Review, European Economic Review*, and many other academic journals and books. He has authored chapters in *Handbook of Labor Economics* and *Handbook of Income Distribution* (North-Holland), co-authored *Models for Dynamic Macroeconomic*s (Oxford University Press) and *Income Distribution in Macroeconomic Models* (Princeton University Press), and co-edited *Welfare and Employment in a United Europe* and *The Economics of Consumer Credit* (MIT Press).

Raymond De Bondt is Professor Emeritus of Managerial Economics, Strategy and Innovation at the KULeuven, Belgium. He is a graduate from KULeuven and Northwestern University. He served as President of the European Association for Research in Industrial Economics (1993-1995), Dean of the Faculty of Economic and Applied Economic Sciences of KULeuven (1994-1997) and Chairperson of KULeuven Research and Development (1995-2005). He has been a visiting professor of managerial economics in China, Israel, Russia and the USA. His main research interests focused on potential competition, price regulation and effects of spill overs on innovation strategies. His publication record includes *Econometrica*, *European Economic Review*, *Journal of Economic Theory*, *Journal of Industrial Economics* and *International Journal of Industrial Organization*.

George Gelauff is currently the director of the KiM Netherlands Institute for Transport Policy Analysis. He studied econometrics at Erasmus University Rotterdam and received his PhD from Tilburg University. Gelauff has broad experience with issues pertaining to mobility, spatial planning, energy, the environment, and the use of social cost-benefit analyses. Moreover, he has worked on the development and use of knowledge for the

purpose of evidence-based policy in various fields, such as macro-economics, institutions, Europe and innovation. He previously served as a Deputy Director at CPB Netherlands Bureau for Economic Policy Analysis, and as a Deputy Director of the Directorate for Economic Policy of the Ministry of Economic Affairs. In addition, for several years Gelauff was a part-time professor at Radboud University Nijmegen.

Matthias Jarke is a Professor of Information Systems and Databases at RWTH Aachen University since 1991. Since 2000, he is also Executive Director of the Fraunhofer FIT research Institute for Applied Information Technology in Aachen and Sankt Augustin, Germany, since 2010 in addition Chairman of the Fraunhofer ICT Group (the largest IT research organization in Europe) and member of the Fraunhofer Presidency. Prior to joining RWTH Aachen University, he served on the faculties of the Stern School of Business at New York University (early promotion 1983, early tenure 1985) and at the University of Passau, Germany. He served as President of the GI German Computer Society, Founding Vice President of the Association for Information Systems AIS, member EU CONNECT Advisory Forum for Horizon 2020, and in various government and business in Germany and other European countries. In his research on cooperative information systems in business, engineering, and culture, he has served a co-coordinator of the national Excellence Cluster on Ultra-Highspeed Mobile Information and Communication (UMIC) within the German Excellence Initiative, and coordinated numerous European projects. He has published over 400 papers in international journals and conferences, with an h-index of 58 in the Google Scholar system, which is the relevant one for computer science. Recent book publications include *Meta Modelling for Method Engineering* (MIT Press) and *Foundations of Data Warehouse Quality* (Springer).

Jan Olhager is a Professor of Supply Chain and Operations Strategy at Lund University since 2012. He received a Master of Engineering in Industrial Engineering and Operations Research from University of California, Berkeley in 1981, and was previously Professor of Production Economics at Linköping University 1998-2011, and Guest Professor of Supply Chain Management at Monash University, Melbourne, Australia in 2009. He was a board member of EurOMA (European Operations Management Association) for six years. He has published more than 55 papers in ISI Web of Science journals. He is co-editor-in-chief of *Operations Management Research*, associate editor of *Decision Sciences,* and serves on the editorial boards of *Journal of Operations Management* and *Production and Operations Management*. He has authored a textbook on operations management in Swedish (Studentlitteratur), and co-edited *Advances in Production Management Systems* (Springer) and *Modelling Value* (Physica Verlag).

David Otley is Distinguished Professor of Accounting and Management (Emeritus) at the Lancaster University Management School where he has worked since 1972, acting as Associate Dean for Finance and Resources from 2001 until 2010. He is a Fellow of the British Academy of Management (1994) and received the Distinguished Academic award of the British Accounting Association in 2001. His research interests are in performance management and management control systems where he has published extensively in leading academic journals (such as *Accounting, Organizations and Society, Management Accounting Research,* and *the Journal of Accounting Research).* He has been extensively involved in research assessment activities, acting as a main panel chair for the UK RAE in 2008 (covering Economics & Econometrics, Accounting & Finance, Business & Management, Library & Information Science) and chairing the Hong Kong RAE panel for Business and Economics in 2013-14. He was President of the Management Accounting section of the American Accounting Association (2009-2010), and is a Trustee of the British Accounting and Finance Association.

John Saunders is Professor Emeritus of Marketing at Aston Business School. His research covers evolutionary marketing (the application of evolutionary theory to marketing), sustainable marketing and the future of marketing. He is past editor of *International Journal of Research in Marketing*, President of the European Marketing Academy and Dean of the Chartered Institute of Marketing. He is also a Fellow of the Chartered Institute of Marketing (FCIM), the British Academy of Management (FBAM), the European Marketing Academy (FEMAC), Freeman of the City of London and Member of the Worshipful Company of Marketors. He served on the Business and Management Panel of Britain's Research Evaluation Exercises (RAE) in 2001 and 2008, where he was deputy chair and the research assessments of the Netherlands, Hong Kong and New Zealand. He has chaired and been a member of numerous QAA, AACSB International and EQUIS panels, and has acted as a consultant to many companies, several business schools and universities.

Henri Servaes is the Richard Brealey Professor of Corporate Governance and Professor of Finance at London Business School. He is a Research Fellow of the Centre for Economic Policy Research and a Research Associate of the European Corporate Governance Institute. Servaes holds a BBA from European University and a MSIA and PhD in finance from Purdue

Ed Snape is Dean and Chair Professor in Management at the Hong Kong Baptist University, where he previously served as Associate Vice President with responsibilities for academic planning and quality assurance, and as Head of the Department of Management. He was previously Professor of Management at Durham University. His areas of interest include corporate control, corporate diversification, initial public offerings, capital structure, and mutual funds. He has published articles on these topics in all the leading finance journals, including the *Journal of Finance*, the *Journal of Financial Economics*, and *the Review of Financial Studies*. He has won prizes for several of his articles, including the *Journal of Financial Economics All Star Paper* award for his article "Additional evidence on equity ownership and corporate value", and the *Distinguished Paper Brattle Prize* for his *Journal of Finance* article: "The cost of diversity: The diversification discount and inefficient investment". In August of 2005, he was featured in the *Financial Times* series on *Gurus of the Future*, and in a 2010 study he was ranked second in Europe in terms of research productivity in financial economics over the period 1990-2008. He has had previous appointments at the Hong Kong Polytechnic University of Chicago, the Katholieke Universiteit Leuven (Belgium), Duke, Strathclyde University, and the University of North Carolina at Chapel Hill. Bradford. He is a chartered member of the UK Chartered Institute of Personnel and Development (CIPD). He has served on several editorial boards, including *Human Relations* and *Journal of Management Studies*. His research interests include employee commitments, leadership, and union participation and his work has appeared in such journals as *Academy of Management Journal*, *British Journal of Industrial Relations*, *Human Relations, Industrial and Labor Relations Review, Industrial Relations*, *Journal of Management Studies*, and *Journal of Applied Psychology*.

Appendix 3: Schedule of the site visit

Schedule Research Review Economics & Business, 21-29 September 2015				
Day 1	**21-sep**	**Maastricht University (MU)**		
		8:30	Arrival of the committee at University Hall, Domplein 29	
	8:30	12:00	Committee meeting, including preparation MU	committee/secretary
	12:00	13:00	Lunch	
MU	13:00	13:30	Meeting with dean/ representatives Faculty Board	• Prof. Philip Vergauwen, dean • Prof. Peter Schotman, member of Faculty Board • Prof. Rudolf Müller, member of Faculty Board • Prof. Mariëlle Heijltjes, member of Faculty Board
	13:30	14:30	Meeting with management research unit	• Prof. Frank Moers, scientific director • Dr. Alexander Brüggen, AIM • Dr. Stefan Straetmans, EFME • Dr. Ronald Peeters, ETBC • Dr. Wilko Letterie, TIID
	14:30	14:45	Evaluation	committee/secretary
	14:45	15:30	Meeting with staff research unit	• Dr. Isabella Grabner, associate professor, AIM • Dr. Olivier Marie, assistant professor, DUHR • Dr. Nils Kok, associate professor, EFME • Dr. Martin Strobel, associate professor, ETBC • Prof. Martin Carree, professor, TIID
	15:30	15:45	Evaluation	committee/secretary
	15:45	16:30	Meeting with board(s) responsible for graduate school/ research school(s)	• Prof. Frank Moers, Executive Board Graduate School • Dr. Ronald Peeters, Executive Board Graduate School • Dr. Wilko Letterie, Executive Board Graduate School
	16:30	17:00	Evaluation and break	committee/secretary
	17:00	17:45	Meeting with PhD candidates	• Christoph Feichter (4th year, AIM) • Nadine Kiratli (5th year, MSCM) • Stefanie Hirsch (3rd year, DUHR) • Christian Nauerz (3rd year, ETBC) • Rogier Quaedvlieg (4th year, EFME) • Jasper Brinkerink (2nd year, TIID)
	17:45	18:45	Committee meeting	committee/secretary
Day 2	**22-sep**	**Vrije Universiteit Amsterdam (VU)**		
	8:30	9:30	committee meeting, preparation VU	committee/secretary

VU	9:30	10:00	Meeting with dean/representatives Faculty Board	• Prof. Willem Verschoor, dean • Prof. Eric Bartelsman, research director
unit 1	10:00	10:45	Meeting with management research unit 1: Economics	• Prof. Eric Bartelsman, research director • Prof. Erik Verhoef, professor spatial economics • Prof. Maarten Lindeboom, professor economics
	10:45	11:15	Evaluation and break	committee/secretary
	11:15	12:00	Meeting with staff research unit 1: Economics	• Dr. Hans Koster, assistant professor Spatial Economics • Dr. Wendy Janssens, associate professor Development Economics • Dr. Remco Zwinkels, associate professor Finance • Dr. Harold Houba, associate professor Econometrics
	12:00	12:15	Evaluation	committee/secretary
	12:15	13:00	Lunch	
	13:00	13:45	Meeting with PhD candidates research unit 1: Economics	• Andries van Vlodrop (Finance, 2nd year) • Lisette Swart (Development Economics, 3rd year) • Luca Pegorari (Economics, 3rd year)
	13:45	14:00	Evaluation	
unit 2	14:00	14:45	Meeting with management research unit 2: Business	• Prof. Svetlana Khapova, director ABRI • Prof. Tom Elfring, professor entrepreneurship • Prof. Paul Jansen, professor HRM • Prof. Peeter Verlegh, professor marketing
	14:45	15:00	Evaluation	committee/secretary
	15:00	15:45	Meeting with boards responsible for graduate schools/ research schools Business VU and UvA	• Prof. Svetlana Khapova, director ABRI • Dr. Maura Soekijad, director Graduate Studies ABRI • Dr. Flore Bridoux, director research master UvA • Dr. Anne Keegan, director graduate school ABS, UvA • Prof. Ans Kolk, director of Research ABS
	15:45	16:00	Evaluation	committee/secretary
	16:00	16:45	Meeting with staff research unit 2: Business	• Dr. Kobe Millet, associate professor Marketing • Dr. Sander de Leeuw, associate professor • Dr. Maria Tims, assistant professor Management and Organisation • Dr. Hans Berends, associate professor Knowledge, Information and Networks • Dr. Roland Koenigsgruber, assistant

				professor Accounting
	16:45	17:00	Evaluation	committee/secretary
	17:00	17:45	Meeting with PhD candidates Business	• Susan Hilbolling (Knowledge, Information and Networks, 2nd year) • Nienke Hofstra (Logistics, 2nd year) • Evgenia Lysova (management & organisation, 4rd year) • Brian Doornenbal (management and organisation, 2nd year) • Arianne van der Wal (PhD Marketing, 2nd year)
	17:45	18:45	Committee meeting	committee/secretary
Day 3	**23-sep**	**University of Amsterdam (UvA)**		
	8:30	9:30	Committee meeting, preparation UvA	committee/secretary
UvA	9:30	10:00	Meeting with dean/representatives Faculty Board	• Prof. Han van Dissel, dean • Prof. Peter Boswijk, director of research ASE • Prof. Ans Kolk, director of research ABS
unit 1: ASE	10:00	10:45	Meeting with management research unit 1: Economics	• Prof. Peter Boswijk, director of research ASE • Prof. Theo Offerman, coordinator Research Priority Area Behavioural Economics • Prof. Roger Laeven, coordinator Research Focal Area Risk and Macro Finance
	10:45	11:15	Evaluation and break	committee/secretary
	11:15	12:00	Meeting with staff research unit 1: Economics	• Dr. Ir. Florian Wagener, programme leader • Prof. Frank Kleibergen, programme leader • Prof. Franc Klaassen, programme leader • Prof. Michel Vellekoop, programme leader • Prof. Randolph Sloof, programme leader • Prof. Cars Hommes, programme leader
	12:00	12:15	Evaluation	committee/secretary
	12:15	13:00	Lunch	
	13:00	13:45	Meeting with PhD candidates research unit 1: Economics	• Joep Lustenhouwer (2nd year) • Christiaan van der Kwaak (4th year) • Andrei Lalu (3rd year) • Arturas Juodis (nearly graduating) • Jindi Zheng (3rd year)
	13:45	14:00	Evaluation	
unit 2: ABS	14:00	14:45	Meeting with management research unit 2: Business	• Prof. Ans Kolk, director of research ABS • Prof. Brendan O'Dwyer, director of research ABS (2013-2014)

	14:45	15:00	Evaluation	committee/secretary
	15:00	15:45	Meeting with staff research unit 2: Business	• Dr. Frank Belschak, associate professor • Prof. Deanne Den Hartog, full professor • Prof. Victor Maas, full professor • Prof. Enrico Perotti, full professor • Dr. Florian Peters, assistant professor • Dr. Jan-Willem Stoelhorst, associate professor • Dr. Marlene Vock, assistant professor
	15:45	16:00	Evaluation	committee/secretary
	16:00	16:45	Meeting with PhD candidates research unit 2: Business	• Conor Clune (3rd year) • Renske van Geffen (4th year) • Monika Kackovic (4th year) • Robert Kleinknecht (3rd year) • Rob Sperna Weiland (2nd year) • Inge Wolsink (4th year) • Dorinth van Dijk (1st year)
	16:45	17:00	Evaluation	committee/secretary
	17:00	18:00	Committee meeting	
Day 4	**24-sep**	**Erasmus University Rotterdam (EUR) / Tinbergen Institute (TI)**		
	8:30	9:30	Committee meeting, preparation EUR/TI	committee/secretary
ESE	9:30	10:00	Meeting with dean/ representatives Faculty Board ESE	• Prof. Philip Hans Franses, dean • Prof. Otto Swank, chairman of the Research Advisory Committee
ERIM	10:00	10:30	Meeting with boards responsible for research schools (ERIM)	• Prof. Marno Verbeek (RSM), scientific director ERIM • Prof. Dennis Fok (ESE), associate director ERIM
	10:30	11:00	Evaluation and break	committee/secretary
TI	11:00	11:30	Meeting with boards responsible for research school (TI)	• Prof. José Luis Moraga (VU/TI), placement director, Board TI • Prof. Dinand Webbink (EUR), Board TI • Prof. Bauke Visser (EUR), general director TI • Prof. Massimo Giuliodori (UvA), director of Graduate Studies
	11:30	11:45	Evaluation	committee/secretary
ESE	11:45	12:30	Meeting management research unit (ESE)	• Prof. Patrick Groenen, programme manager Econometrics & Management Science • Prof. Patrick Verwijmeren, programme manager Finance & Accounting • Prof. Enrico Pennings, programme manager Applied Economics • Prof. Benedict Dellaert, programme manager Marketing • Prof. Robert Dur, programme manager Economics

	12:30	12:45	Evaluation	committee/secretary
	12:45	13:30	Lunch	committee/secretary
ESE	13:30	14:15	Meeting with staff members research unit (ESE)	• Prof. David Veenman, endowed professor, Marketing • Prof. Aurelien Baillon, endowed professor, Applied Economics • Dr. Josse Delfgaauw, associate professor, Economics • Dr. Michel van der Wel, associate professor, Econometrics & Management Science • Prof. Martijn de Jong, full professor, Marketing
	14:15	14:30	Evaluation	committee/secretary
ESE	14:30	15:15	Meeting with PhD candidates ESE (ERIM and TI)	• Ronald de Vlaming Msc (ERIM), third year) • Caroline Witte Msc (ERIM, third year) • Myrthe van Dieijen MSc (ERIM, 2nd year) • Hale Koc Msc (TI, fifth year)
	15:15	15:30	Evaluation	committee/secretary
TI	15:30	16:00	Meeting with staff representatives Educational board and Research Council TI	• Prof. Bas van der Klaauw (VU), Educational Board TI • Dr. Sebastian Gryglewicz (EUR), associate professor, Educational Board TI • Prof. Cars Hommes (UvA), Research Council TI • Prof. Joep Sonnemans (UvA), Research Council TI • Dr. Maarten Bosker (EUR), associate professor, Research Council TI
	16:00	16:15	Evaluation	committee/secretary
TI	16:15	17:00	Meeting with PhD candidates TI	• Francine Gresnight (EUR / 3rd year) • Sándor Sóvágó (VU / 1st year) • Uwe Thummel (EUR/VU / 2nd year) • Oana Furtuna (UvA / 2nd year) • Sander Barendse (EUR / 4th year) • Dieter Wang (UvA / 2nd year MPhil / student member Educational Board)
	17:00	18:00	Evaluation and committee meeting	committee/secretary
Day 5	**25-sep**	**University of Groningen (RUG)**		
	8:30	9:30	Committee meeting, preparation RUG	committee/secretary
	9:30	10:30	Writing session	

	10:30	11:30	Meeting with dean/representatives Faculty Board/management research unit	• Prof. Harry Garretsen, dean • Prof. Tammo Bijmolt, director research institute and professor of Marketing Research • Prof. Gerben van der Vegt, director research programme HRM&OB, director research institute per November 1, 2015, professor of Work and Organizational Psychology • Rina Koning, policy officer
	11:30	12:00	Evaluation and break	committee/secretary
	12:00	12:45	Meeting with board(s) responsible for graduate school/ research school(s)	• Dr. Taco van der Vaart, director of graduate studies and associate professor of Operations Management • Prof. Tammo Bijmolt, director research institute and professor of Marketing Research • Prof. Erik Dietzenbacher, key lecturer Graduate Programme and chair board of examiners research master, professor of Interindustry Economics • Rina Koning, policy officer
	12:45	13:00	Evaluation	committee/secretary
	13:00	14:00	Lunch	
	14:00	14:45	Meeting with staff research unit	• Prof. Herman de Jong, professor of Economic History • Dr. Jennifer Jordan, associate professor and Rosalind Franklin Fellow of HRM&OB • Dr. Jochen Mierau, assistant professor of Economics • Prof. Peter Verhoef, professor of Marketing • Prof. Iris Vis, professor of Industrial Engineering
	14:45	15:00	Evaluation	committee/secretary
	15:00	15:45	Meeting with PhD candidates	• Nonhlanhla Dube MSc (Operations Management) • Bianca Harms MSc (Parttime PhD, Marketing and Lecturer Stenden University) • Gert Jan Romensen MSc (Economics) • Jacoba Oedzes MSc (HRM&B) • Edin Smailhodzic MSc (Information Systems)
	15:45	16:15	Evaluation and break	committee/secretary
	16:15	17:15	Committee meeting / discussing preliminary scores	committee/secretary
Day 6	**28-sep**	**Utrecht University (UU)**		
UU	8:30	9:30	Committee meeting, preparation UU	committee/secretary

	9:30	10:00	Meeting with dean/representatives Faculty Board	• Prof. Janneke Plantenga, head of the department, chair holder Economics of the Welfare State • Prof. Wolter Hassink, director of the TKI Research Institute, chair holder Applied Econometrics • Prof. Jeroen Hinloopen, director of studies, professor Industrial Organisation
	10:00	10:45	Meeting with management research unit	• Prof. Wolter Hassink, director of the TKI Research Institute, chair holder Applied Econometrics • Dr. Kris DeJaegher, associate professor, chair Microeconomics • Dr. Peter Jan Engelen, associate professor, chair Finance and Financial Markets • Dr. Jacob Jordaan, assistant professor, chair International Macroeconomics • Dr. Esther Wissink, head U.S.E. research affairs (TKI Research Institute)
	10:45	11:15	Evaluation and break	committee/secretary
	11:15	12:00	Meeting with staff research unit	• Dr. Niels Bosma, assistant professor, chair Strategy, Organization & Entrepreneurship • Dr. Adriaan Kalwij, associate professor, chair Applied Econometrics • Prof. Stephanie Rosenkranz, full professor, chair holder Microeconomics • Dr. Anna Salomons, assistant professor, chair Applied Econometrics • Dr. Mark Sanders, associate professor, chair International Macroeconomics • Prof. Erik Stam, full professor, chair holder Strategy, Organization & Entrepreneurship
	12:00	12:15	Evaluation	committee/secretary
	12:15	13:15	Lunch	
	13:15	14:00	Meeting with board(s) responsible for graduate school/ research school(s)	• Prof. Janneke Plantenga, vice-dean research LEG faculty, head of the department, chair holder Economics of the Welfare State • Prof. Wolter Hassink, director of the TKI Research Institute, chair holder Applied Econometrics • Dr. Kris DeJaegher, associate professor, chair Microeconomics
	14:00	14:15	Evaluation	committee/secretary
	14:15	15:00	Meeting with PhD candidates	• Leydi Breuls, MSc (1st year, Economics of the Public Sector) • Joyce Delnoij, MSc (4th year, Microeconomics) • Milena Dinkova, MSc (1st year, Applied Econometrics)

				• Ian Koetsier, MSc (4th year, Economics of the Public Sector) • Werner Liebregts, MSc (3rd year, Strategy, Organization & Entrepreneurship) • Jordy Meekes, MSc (2nd year, Applied Econometrics)
	15:00	15:30	Evaluation and break	committee/secretary
	15:30	16:30	Committee meeting / discussing preliminary scores	committee/secretary
	16:30	17:30	Writing session	committee/secretary
Day 7	**29-sep**	**End of site visit**		
	9:00	12:00	Committee meeting, discussing scores	committee/secretary
	12:00	13:00	Lunch	
	13:00	15:00	Writing session, Sterrecamer	committee/secretary
	15:00	16:00	Presentation of preliminary results by committee chair	
	16:00		End of site visit	

Appendix 4: Quantitative data

Erasmus School of Economics, Erasmus University Rotterdam

Research staff (SEP D3a)

(#/fte)	2008	2009	2010	2011	2012	2013	2014
Full prof.	30/8.4	29/8.5	27/8	28/7.9	33/9.4	31/9.5	32/9.5
Associate prof.	17/4.5	17/4/6	21/5.4	23/5.4	25/6.1	26/7.6	30/8.4
Assistant prof.	44/12.5	46/14.9	55/17.1	67/19.4	68/22.4	73/23.8	79/24.4
PhD candidate	87/56.5	95/61.2	109/67.9	120/71.7	122/75.5	118/78.6	98/60.4
Total research staff	**178/81.9**	**187/89.2**	**212/98.4**	**238/104.4**	**248/113.4**	**248/119.5**	**239/102.7**

Resources (SEP D3c)

Funding x € 1,000	2008	2009	2010	2011	2012	2013	2014
Direct funding	2,981.06	3,532.38	3,519.77	2,924.07	4,624.12	4,693.73	4,212.72
Research grants	647.63	742.98	1,245.13	1,353.28	1,421.23	1,511.43	1,326.18
Contract research	1,101.87	799.49	1,263.76	1,678.23	1,191.97	1,408.73	1,386.47
Other	185.89	190.74	132.99	406.93	79.33	275.42	238.49
Total funding	4,916.45	5,265.59	6,161.65	6,362.51	7,316.65	7,889.31	7,163.86
Expenditures x € 1,000	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Personnel	4,469.50	4,786.90	5,601.50	5,784.10	6,651.50	7,172.10	6,512.60
Other[1]	446.95	478.69	560.15	578.41	665.15	717.21	651.26
Total expenditures	4,916.45	5,265.59	6,161.65	6,362.51	7,316.65	7,889.31	7,163.86

[1] estimated as 10% of the personnel expenditures.

School of Business and Economics, Maastricht University

Research staff (SEP D3a)

(#/fte)	2008	2009	2010	2011	2012	2013	2014
Full prof.	66 /16,8	64/16,8	62/16,3	60/15,9	55/15,1	52/14	57/13,4
Associate prof.	33/10,3	34/11,1	35/11,8	33/11,6	35/11,8	38/12,7	41/14,3
Assistant prof.	66/22,5	67/22,7	62/21,1	57/20,4	52/18,8	53/19,2	53/18,9
Postdoc	23/19,1	32/27,2	34/27,5	34/30,2	30/26,9	24/21,7	21/18,8
PhD candidate	99/67,7	119/81,1	132/89,2	126/85,5	125/84,9	114/78,6	104/70,0
Total research staff	**287/136,4**	**316/158,8**	**325/165,8**	**310/163,6**	**297/157,6**	**281/146,2**	**276/135,4**

Resources (SEP D3c)

Funding x € 1,000 / %fte	2008	2009	2010	2011	2012	2013	2014
Direct funding	119.85/ 51.5%	133.75/ 64.1%	134.64/ 51.6%	128.54/ 51.3%	123.48/ 50.1%	118.99/ 49.7%	114.39/ 49.7%
Research grants	19.09/ 8.2%	22.11/ 10.6%	19.13/ 7.3%	17.03/ 6.8%	21.88/ 8.9%	24.76/ 10/4%	22.32/ 9.7%
Contract research	93.97/ 40.3%	105.77/ 25.3%	106.93/ 41%	105.01/ 41.9%	101.03/ 41.0%	95.46/ 39.9%	93.51/ 40.6%
Other	0	0	0	0	0	0	0
Total Funding	232.91/ 100.0%	208.51/ 100.0%	260.70/ 100.0%	250.58/ 100.0%	246.39/ 100.0%	239.21/ 100.0%	230.22/ 100.0%
Expenditures x € 1,000 / %fte	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Personnel costs	12,815 50.4%	15,009 59.0%	15,055 51.9%	14,684 58.3	13,955 62%	14,328 66.9%	14,010 68%
Other costs	12,589 49.6%	10,450 41.0%	13,948 48.1%	10,507 41.7%	8.544 38.0%	7,092 33.1%	6,583 32.0%
Total expenditures	50,961 100.0%	51,232 100.0%	55,516 100.0%	51,900 100.0%	45,944 100.0%	45,204 100.0%	44,320 100.0%

SOM, University of Groningen

Research staff (SEP D3a)

(#/fte)	2008	2009	2010	2011	2012	2013	2014
Full prof.	39/17,0	42/18,6	41/19,9	43/18	44/18,7	45/18,8	45/19,7
Associate prof.	44/20,3	47/21,1	49/22,5	47/23,1	49/21,25	46/19,7	46/19,2
Assistant prof.	27/10,5	40/14,2	56/19,9	59/23,55	56/22	63/24	65/27,2
Postdoc	6/2,8	12/5,9	14/9,8	20/11,85	24/13,6	20/12,5	16/10,5
PhD candidate	114/90.0	127/87,9	115/84	119/84,8	111/83,8	113/83,4	108/79,2
Scientific staff <0.2 fte*	15/1,7	17/1,8	18/1.0	19/0,4	17/0,1	17/0,1	15/0
Total research staff	**245/142,2**	**285/149,3**	**293/157**	**307/161,6**	**301/159,4**	**304/158,5**	**295/155,6**

* includes honorary professors
** PhD students: appointments and bursaries

Resources (SEP D3c)

Funding fte/%	2008	2009	2010	2011	2012	2013	2014
Direct funding	82,7 69,8%	89,7 72,5%	95 70,4%	99,2 67,7%	96,8 68,4%	104,3 73,8%	104 73,5%
Research grants	9,6 8,1%	9,9 8,0%	14,4 10,7%	18,2 12,4%	18,6 13,2%	13,2 9,3%	15,1 10,7%
Contract research	25,9 21,8%	23,3 18,8%	24,2 17,9%	24,4 16,7%	22,1 15,6%	22,4 15,9%	17,9 12,6%
Other	0,5 0,3%	0,9 0,7%	1,3 1,0%	4,7 3,2%	3,9 2,8%	1,4 1,0%	4,5 3,2%
Total funding	118,5 100%	123,7 100%	135 100%	146,5 100%	141,5 100%	141,3 100%	141,5 100%
Expenditures x € 1,000 /%	2008	2009	2010	2011	2012	2013	2014
Personnel costs	9.388,40 88,3%	10.519,30 89,4%	11.279,20 91,4%	11.875,80 92,9%	12.578,40 88,7%	12.957,80 89,8%	13.587,50 91,5%
Other costs	1.241,40 11,7%	1.242,60 10,6%	1.063,60 8,6%	910,9 7,1%	1.598,10 11,3%	1.469,90 10,2%	1.264,90 8,5%
Total expenditures	10.629,80 100%	11.761,90 100%	12.342,80 100%	12.786,70 100%	14.176,50 100%	14.427,70 100%	14.852,40 100%

Utrecht School of Economics, Utrecht University

Staff (SEP D3a)

(#/fte)	2008	2009	2010	2011	2012	2013	2014
Scientific Staff [a) b)]	56/17,0	52.5/16,8	50/14,6	48/13,8	46/14,9	46/15,2	45/14,2
Full prof.	15,5/3,5	15/3,5	14/3,5	17/4,5	14/4,3	13/3,8	14/4,1
Associate prof.	6.5/1,8	7/2,5	8/2,9	7/2,2	6,5/2,3	6.5/2,6	7/3,0
Assistant prof.	34/11,6	30,5/11,8	28/8,3	25/6,8	26,5/8,6	26,5/8,8	24/7,1
Postdoc[c)]	1/0,8	1/0,2	1/0,3	0/0,0	0/0,0	1/0,4	4,5/1,7
PhD candidate[d)]	30	27.5	32	41	50	47	39,5
Total research staff	**87 / 17,8**	**82 / 17,8**	**82 / 14,9**	**88 / 13,8**	**96 / 14,9**	**95,5 / 15,8**	**90 / 15,9**

a) Comparable with WOPI-categories Professor, Associate Professor en Assistant Professor, tenured and non-tenured.
b) Staff numbers are depicted by either a '1' for a whole year appointment in a specific function group, or a '0.5' in case a change in appointment or function group took place. The full time equivalents (fte) are corrected for the actual number of months a staff member was appointed at U.S.E. during a specific year (i.e. MYE, man-year equivalent).
c) Comparable with WOPI-category Researcher.
d) Total of standard PhD (employed) and Contract PhD's (externally or internally funded but not employed).

Resources (SEP D3c)

Funding x € 1,000 /%	2008	2009	2010	2011	2012	2013	2014
Direct funding[a)]	2429 65%	2374 68%	2128 62%	2160 62%	2260 61%	2548 66%	2723 73%
Research grants[b)]	171 4%	88 3%	94 3%	272 8%	216 6%	55 1%	38 1%
Contract research[c)]	1161 31%	1015 29%	1214 35%	1041 30%	1197 33%	1310 33%	960 26%
Other[d)]	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
Total funding	3761 100%	3477 100%	3436 100%	3473 100%	3673 100%	3913 100%	3721 100%
Expenditures x € 1,000 /%	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Personnel costs first flow of funds	2265 52%	2230 56%	2031 54%	2052 53%	2023 51%	2003 50%	2033 55%
Personnel costs second, third flow of funds	487 11%	851 21%	761 20%	952 24%	913 23%	884 22%	767 21%
Other costs	748	627	458	527	554	660	763

first flow of funds	18%	16%	12%	14%	14%	16%	20%
Other costs second, third flow of funds	818 19%	292 7%	501 14%	361 9%	492 12%	463 12%	149 4%
Total expenditures	4318 100%	4000 100%	3751 100%	3892 100%	3982 100%	4010 100%	3712 100%

a) Direct funding (basis financiering / lump sum budget).
b) Research grants obtained in national scientific competition (e.g. grants from NWO and KNAW).
c) Research contracts for specific research obtained from external organisations, such as industry, governmental ministries, European organisations and charity organizations.
d) Funds that do not fit the other categories.

Amsterdam Business School, University of Amsterdam

Staff (SEP D3a)

(#/fte)	2008	2009	2010	2011	2012	2013	2014
Scientific Staff	58/22,0	60/23,5	61/24,1	51/18,8	45/17,5	58/20,9	72/27,7
Full prof.	21/7,5	19/6,9	19/6,2	15/5,0	13/4,6	14/4,9	16/5,5
Associate prof.	8/3,0	9/3,8	9/4,2	9/3,2	7/3,2	7/3,0	10/3,6
Assistant prof.	29/11,5	32/12,7	33/13,6	27/10,5	25/9,7	37/13,1	46/18,6
Postdoc	2/2,0	7/2,2	8/5,3	7/3,9	4/2,0	2/1,0	5/2,9
PhD candidate	29/12,6	31/15,3	29/13,4	27/12,9	29/10,0	22/9,9	27/11,2
Total research staff	**89/36,6**	**98/41,0**	**98/42,7**	**85/35,6**	**78/29,4**	**82/31,8**	**104/41,7**

Resources (SEP D3c)

Funding fte/%	2008	2009	2010	2011	2012	2013	2014
Direct funding	30,0 82,1%	35,7 87,2%	36,7 85,9%	29,7 83,4%	26,4 89,9%	28,7 90,1%	35,4 85,0%
Research grants	1,1 3,0%	1,0 2,4%	1,2 2,8%	0,8 2,3%	1,1 3,9%	0,6 1,9%	0,6 1,4%
Contract research	5,4 14,9%	4,2 10,4%	4,8 11,3%	5,1 14,4%	1,8 6,2%	2,5 8,0%	5,7 13,6%
Total funding	36,6 100%	41,0 100%	42,7 100%	35,6 100%	29,4 100%	31,8 100%	41,7 100%
Expenditures x € 1,000/%	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Personnel	2.652.6 83,2%	3.007.900 84,9%	3.254.420 75,7%	2.698.510 80,6%	2.298.480 70,3%	2.534.500 74,2%	3.292.570 75,3%
Other	536.000 16,8%	536.000 15,1%	1.043.000 24,3%	649.000 19,4%	972.000 29,7%	883.600 25,9%	1.079.200 24,7%
Total expenditures	3.188.640 100%	3.543.900 100%	4.297.420 100%	3.347.510 100%	3.270.480 100%	3.418.100 100%	4.371.770 100%

Amsterdam School of Economics, University of Amsterdam

Staff (SEP D3a)

(#/fte)	2008	2009	2010	2011	2012	2013	2014
Full prof.	29/10,8	32/11,8	31/12,3	32/11,2	33/12,0	29/12,3	26/11,9
Associate prof.	9/4,5	7/3,6	7/3,8	9/4,2	6/2,6	6/2,4	6/2,6
Assistant prof.	23/8,0	18/8,4	21/8,9	18/8,0	27/7,5	23/8,8	20/7,7
Postdoc	23/9,2	17/7,3	15/7,8	12/5,3	14/7,4	13/6,2	13/7,4
PhD candidate	35	39	37	53	45	53	60
Total research staff	**119**	**113**	**111**	**124**	**125**	**124**	**125**

Resources (SEP D3c)

Funding fte/%	2008	2009	2010	2011	2012	2013	2014
Direct funding	26,7 57%	28,7 61%	30,4 62%	30,7 67%	30,6 60%	33,3 59%	37,2 62%
Research grants	12,1 26%	9,3 19%	11,1 22%	10,3 23%	14,8 29%	16,9 30%	15,7 26%
Contract research	8,3 17%	9,4 20%	8,0 16%	4,7 10%	5,9 11%	6,4 11%	7,1 12%
Total funding	47,0 100%	47,3 100%	49,5 100%	45,7 100%	51,3 100%	56,5 100%	59,9 100%
Expenditures x € 1,000/%	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Personnel	3533 91%	3783 86%	3975 86%	3748 88%	3936 84%	4232 88%	4348 81%
Material	357 9%	602 14%	610 14%	528 12%	743 16%	605 12%	91 19%
Total expenditures	3890	4385	4585	4276	4679	4837	4439

Faculty of Economics and Business Administration, Vrije Universiteit

Staff (SEP D3a)

Research unit Economics (#/fte)	2008	2009	2010	2011	2012	2013	2014
Full prof.	24/10,2	24/10,0	25/9,6	26/9,9	25/11,3	25/10,5	25/10,3
Associate prof.	21/7,5	22/8,4	20/7,9	20/7,5	20/8,8	19/9,0	20/8,5
Assistant prof.	21/7,9	23/10,0	23/9,4	28/9,8	29/10,7	33/12,0	35/14,2
Postdoc	10/7,9	10/7,1	10/6,2	11/6,1	13/8,2	16/10,4	12/8,3
PhD candidate	43/21,6	47/27,6	56/30,4	65/33,2	70/37,2	66/37,2	56/34,4
Total research staff	119/55,0	126/63,1	134/62,4	150/63,7	157/76,2	159/79,1	148/75,7
Research unit Business (#/fte)	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Full prof.	14/5,1	17/4,8	16/4,7	15/5,4	16/6,3	16/6,6	19/7,14
Associate prof.	18/6,1	18/6,3	18/6,4	19/5,8	21/ 6,80 fte	19/ 7,17 fte	19/ 7,50 fte
Assistant prof.	22/6,7	33/8,7	37/11,1	38/11,0	40/10,8	55/14,1	56/19,7
Postdoc	6/1,7	5/1,6	5/1,5	5/1,5	4/1,2	4/2,1	2/0,7
PhD candidate	22/9,0	30/15,4	29/16,0	29/18,2	34/16,9	33/16,6	37/19,0
Total research staff	**82/27,9**	**103/36,1**	**105/39,1**	**106/41,2**	**115/41,7**	**127/46,5**	**133/54,0**
Total research staff FEWEB	**201/83,6**	**229/100**	**239/103,2**	**256/108,4**	**272/118,2**	**286/125,7**	**281/129,7**

Resources (SEP D3c)

Funding fte/%	2008	2009	2010	2011	2012	2013	2014
Direct funding	53,7 64%	61,3 61%	63,9 62%	64,9 60%	67,1 57%	70,9 56%	79,8 61%
Research grants	9,5 11%	9,7 10%	9,6 9%	14,9 14%	19,6 17%	21,0 17%	21,0 16%
Contract research	20,5 25%	29,0 29%	29,7 29%	28,5 26%	31,4 26%	33,8 27%	28,9 23%
Total funding	83,6 100%	100,0 100%	103,2 100%	108,4 100%	118,2 100%	125,7 100%	129,7 100%
Expenditures x €1.000/%	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Personnel costs	6.250 85%	7.631 85%	7.910 85%	8.265 85%	9.198 85%	10.079 85%	10.636 85%
Other costs	1.103 15%	1.346 15%	1.396 15%	1.459 15%	1.623 15%	1.778 15%	1.877 15%
Total expenditure	7.353 100%	8.977 100%	9,306 100%	9.724 100%	10.821 100%	11.857 100%	12.513 100%

Appendix 5: CWTS bibliometric benchmark study

Bibliometric benchmark study on the Dutch Universities in the field of Economics & Business 2008 – 2013/14

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Final Draft

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Contents

1 Database Structure and Bibliometric Indicators

In this chapter, we discuss the methods underlying the bibliometric analyses presented in this report[1].

1.1 Database Structure

At CWTS, we calculate our indicators based on our in-house version of the Web of Science (WoS) database of Thomson Reuters. WoS is a bibliographic database that covers the publications of about 12,000 journals in the sciences, the social sciences, and the arts and humanities. Each journal in WoS is assigned to one or more subject categories. We note that our in-house version of the WoS database includes a number of improvements over the original WoS database. Most importantly, our database uses a more advanced citation-matching algorithm and an extensive system for address unification.

To determine the appropriateness of our indicators for assessing a particular research entity, we look at the internal WoS coverage of the entity. The internal WoS coverage of an entity is defined as the proportion of the references in its output that points to publications (also) covered by WoS (see section 3). The lower the internal WoS coverage of an entity's output, the more careful one should be interpreting the results of our indicators. The rest of this chapter provides an in-depth discussion of the main bibliometric indicators that we use in this report.

Overview of the bibliometric indicators.

Indicator	*Dimension*	*Definition*
P	Output	Total number of publications of a unit.
MCS	Impact	Average number of citations of the publications of a unit (self-citations not included).
TCS	Overall	Total number of citations (self-citations not included, P times MCS).
MNCS	Impact	Average normalized number of citations of the publications of a unit (self-citations not included).
TNCS	Impact	Total normalized number of citations (self-citations not included, P times MNCS).
MNJS	Journal Impact	Average normalized citation score of the journals in which a research group has published.
NCS	Overall	Total average normalized number of citations.
PP(top 10%)	Impact	Proportion of papers that belong to the top 10%.
PP(uncited)	Overall	Proportion of papers uncited.
PP(self cits)	Overall	Proportion of self citations.
PP(collab)	Collaboration	Proportion inter-institutional collaborative publications.
PP(int collab)	Collaboration	Proportion of publications involving international collaboration.

[1] We refer to Moed (2005) for a general introduction into the use of bibliometrics and citation analysis for research evaluation.

Int cov	Output	Internal coverage. Proportion of cited references from the unit's output also linked to (other) WoS publications, thus providing a proxy measure of the suitability of WoS coverage for the units' research topics.

1.2 Indicators of Output

To measure the total publication output of a unit we use a very simple indicator. This is the number of publications indicator, denoted by P. This indicator is calculated by counting the total number of publications of a research unit. Only publications of the document types *article, letters* and *review* are taken into account.

1.3 Indicators of Impact

Citation Window and other methodological explanations

A number of indicators are available for measuring the average scientific impact of the publications of a unit. These indicators are all based on the idea of counting the number of times the publications of a unit have been cited. Citations can be counted using either a fixed-length citation window or a variable-length citation window. In the case of a fixed-length citation window, only citations received within a fixed time period (e.g., four years) after the appearance of a publication are counted. In the case of a variable-length citation window, all citations received by a publication up to a fixed point in time are counted, which means that older publications have a longer citation window than more recent publications.

An advantage of a variable-length window over a fixed-length window is that a variable-length window may yield higher (non-normalized) citation counts (depending on the window length), which would lead to more robust impact measurements. The advantage of a fixed-length citation window is that it is possible to meaningfully analyze the trend patterns of the non-normalized impact indicators (i.e., when a variable-length citation window is considered, indicators such as the average impact of publications [MCS] or their total impact [TCS] systematically present a decreasing pattern). In this study, we used a variable-length citation window. For the period analysis 2008-2013 citations received to 2014 are counted.

In the calculation of our impact indicators, we disregard self-citations. We classify a citation as a self-citation if the citing publication and the cited publication have at least one author name (i.e., last name and initials) in common. We disregard self-citations because they have a somewhat different nature than ordinary citations. Many self-citations are given for good reasons, in particular to indicate how different publications of a researcher build on each other. However, sometimes self-citations may serve as a mechanism for self-promotion rather than as a mechanism for indicating relevant related work. Therefore, we prefer to exclude self-citations

from the calculation of our impact indicators. By our approach the sensitivity of our impact indicators to manipulation is reduced. Moreover, it means that our impact indicators focus on measuring the impact of a researcher's work on other members of the scientific community rather than on his own work.

As we mentioned previously, each journal in WoS is assigned to one or more subject categories. These subject categories can be interpreted as scientific fields. There are approximately 250 subject categories in WoS. Publications in multidisciplinary journals such as *Nature*, *Proceedings of the National Academy of Sciences*, and *Science* were individually allocated, if possible, to other subject fields on the basis of their references. The reassignment was done proportionally to the number of references pointing to a subject category. It is important to highlight that the impact indicators are calculated based on this assignment.

Each publication in WoS has a document type. The most frequently occurring document types are article, book review, correction, editorial material, letter, meeting abstract, news item, and review. In the calculation of bibliometric indicators, we only take into account publications of the citable document types article, letter and review. Publications of other document types usually do not make a significant scientific contribution and are therefore disregarded.

Mean Citation Score (MCS)

The most straight forward impact indicator we use is the mean citation score indicator, denoted by MCS. This indicator equals the average number of citations per publication. Only citations within the relevant citation window are counted, while self-citations are excluded. A major shortcoming of the MCS indicator is that it cannot be used to make comparisons between scientific fields. This is because different fields have very different citation characteristics. For instance, using a three-year fixed-length citation window, the average number of citations of a publication of the document type article equals 2.0 in mathematics and 19.6 in cell biology. So, it makes no sense to make comparisons between these two fields using the MCS indicator. Furthermore, when a variable-length citation window is used, the MCS indicator also should not be used to make comparisons between publications of different ages. In the case of a variable-length citation window, the MCS indicator favours older publications over more recent ones because older publications tend to have higher citation counts (as they have had more time to receive citations).

Mean Normalized Citation Score (MNCS)

6

Our mean normalized citation score indicator, denoted by MNCS, provides a more sophisticated alternative to the MCS indicator. The MNCS indicator is similar to the MCS indicator except that normalization is being applied to correct for differences in citation characteristics between publications from different scientific fields and between publications of different ages (in the case of a variable-length citation window)[2]. To calculate the MNCS indicator for a unit, we first calculate the normalized citation score of each publication of the unit. The normalized citation score of a publication equals the ratio of the actual and the expected number of citations of the publication, where the expected number of citations is defined as the average number of citations of all publications in WoS belonging to the same field and having the same publication year.

The field (or the fields) to which a publication belongs is determined by the WoS subject categories of the journal in which the publication appeared. The MNCS indicator is obtained by averaging the normalized citation scores of all publications of a unit. If a unit has an MNCS indicator score of 1.00, this means that on average the actual number of citations of the publications of the unit equals the expected number of citations. In other words, on average the publications of the unit have been cited as frequently as an average publication similar in terms of field and publication year using the same citation window. An MNCS indicator score of, for instance, 2.00 means that on average the publications of a unit have been cited twice as frequently as would be expected based on their field and publication year. We refer to Appendix I and to Waltman, Van Eck, Van Leeuwen, Visser, and Van Raan (2011a and 2011b) for more details on the MNCS indicator.

PP(top 10%): Proportion of top 10% papers

In addition to the MNCS indicator, we use another important impact indicator. This is the *proportion of publications belonging to the top 10% most highly cited*, denoted by PP(top 10%). For each publication of a research group, we determine whether it belongs to the top 10% based on its number of citations of all WoS publications in the same field (i.e., the same WoS subject category) and from the same publication year. The PP(top 10%) indicator of a research entity equals the proportion of its publications belonging to this top 10%. If a research group has a

[2] We do not normalize for document types. The distinction between the different document types is sometimes based on somewhat arbitrary criteria. This is especially the case for the distinction between the document types *article* and *review*. One of the main criteria used by WoS to distinguish between these two document types is the number of references of a publication. In general, a publication with fewer than 100 references is classified as *article* while a publication with at least 100 references is classified as *review*. It is clear that this criterion does not yield a very accurate distinction between ordinary articles and review articles and this is we consider them as one single document type.

PP(top 10%) indicator of 10%, it means that the actual number of top 10% publications of the group equals the expected number. A PP(top 10%) indicator of, for instance, 20% means that a group has twice as many top 10% publications as expected. Of course, the choice to focus on top 10% publications is somewhat arbitrary. Instead of the PP(top 10%) indicator, we can also calculate for instance a PP(top 1%), PP(top 5%) or PP(top 20%) indicator. In this study, we use the PP(top 10%) indicator. This indicator has a clear focus on high impact publications, while the indicator is more stable than for instance the PP(top 1%) indicator.

To assess the impact of the publications of a unit, we recommend relying on a combination of the scores of the MNCS indicator and the PP(top 10%) indicator. A weakness of the MNCS indicator to be taken into account is its strong sensitivity to publications with a very large number of citations. If a unit has one very highly cited publication, this is usually sufficient for a high score on the MNCS indicator, even if the other publications of the group have received only a small number of citations. Because of this, the MNCS indicator may sometimes seem to significantly overestimate the actual scientific impact of the publications of a unit. The PP(top 10%) indicator is not sensitive to such outliers. A paper belongs to the top 10% or not, regardless of the number of citations received. A disadvantage of the PP(top 10%) indicator is the artificial dichotomy it creates between publications that belong to the top 10% and publications that do not belong to the top 10%. A publication whose number of citations is just below the top 10% threshold does not contribute to the PP(top 10%) indicator, while a publication with one or two additional citations does belong to the top 10%. The MNCS indicator and the PP(top 10%) indicator are complementary to each other. This is why we recommend taking into account both indicators when assessing the impact of a unit's publications.

It is important to note that the correction for field differences that is performed by the MNCS and PP(top 10%) indicators provides only a partial correction. As already mentioned, the field definitions on which these indicators are based on the WoS subject categories. It is clear that, unlike these subject categories, fields in reality do not have well-defined boundaries. The boundaries of fields tend to be fuzzy, fields may be partly overlapping, and fields may consist of multiple subfields that each have their own characteristics. From the point of view of citation analysis, the most important shortcoming of the WoS subject categories seems to be their heterogeneity in terms of citation characteristics. Many subject categories consist of research areas that differ substantially in their density of citations. For instance, within a single subject category, the average number of citations per publication may be 50% larger in one research area than in another. The MNCS and PP(top 10%) indicators do not correct for this within-

subject-category heterogeneity. This can be a problem especially when using these indicators at lower levels of aggregation, for instance at the level of departments or individuals.

Mean Normalized Journal Score (MNJS)

The MNJS is an indicator to value the journals in which researchers manage to get their research published. It is a much more sophisticated value than the Journal Impact Factor, which is often used for this purpose. The MNJS indicator is obtained by averaging the normalized journal scores. The MNJS indicator is closely related to the MNCS indicator. The only difference is that instead of the actual number of citations of a publication, the MNJS indicator uses the average number of citations of all publications published in a particular journal (in a specific year). The interpretation of the MNJS indicator is analogous to the interpretation of the MNCS indicator. If a unit has an MNJS score of 1.00, this means that on average the group published in journals that are cited as frequent as would be expected based on the field to which they belong. Furthermore, an MNJS indicator of 2.00 means that, on average, a group has published in journals that are cited twice as frequently as would be expected in the field to which they belong.

2 Data collection

The list of core and benchmark Universities was provided by the consortium of Dutch universities and were selected from the unified names as provided by the CWTS database and used in the Leiden ranking *(http://www.leidenranking.com)*. The 'core' is defined as a relevant selection of 'Dutch' universities.

2.1 Selection

The benchmark universities consist of a concise group of relevant institutes. When a provided institute name could not be matched within the context of the unified names within the Leiden ranking they were left out of the analyses.

As the same paper may be attributed to more than one institute, the output and the citation impact results were computed using fractional counting (**P(f)**). This means that when publications are published in cooperation between two or more institutes, the contribution and impact are distributed evenly across all participants. So if two institutes publish a paper that is cited four times, they are both allotted half a publication cited 2 times.
In **table 1** the results are also given in 'whole counting' (number of publications the institute has contributed to), this figure is shown under the moniker **P**. The benchmark institutes were divided into either a 'top' or 'peer' category. Except for **table 1** we will use fractional counting only in the report.

The scientific field in which the papers for these institutes were selected, was delineated using a defined set of journals relevant to the scientific fields of by and large 'economics' and 'business' as supplied by the consortium itself. The list of these journals and the WoS scientific fields they are classified in, is supplied as in **Appendix II** in Excel format.

As it was mentioned in section 2.1 only WoS indexed publications (as in the Science Citation Index, Social Science Citation Index and Arts & Humanities Citation Index) are considered. This means that books, book chapters, journal publications not indexed in WoS, as well as conference proceedings publications, working papers, etc. are not included in the analysis.

Each publication in WoS has a document type, such as 'article', 'book review', 'editorial material', 'letter', or 'review'. In our analysis, we only take into account publications of the document types

'article', 'letter' and 'review', which are the most important 'citable items'. The scientific performance results are presented using these document types of WoS indexed publications.

2.2 Coverage of CI Publications

To gain insight in the CI coverage of the publications included in the study, we analyzed the references of the papers included in the present study. To this end, references in the CI-covered publications for the period under consideration were matched with our extended CI publication database for the core and the benchmark units. In this way, we can estimate the importance of CI publications to the units participating in the study by determining to what extent they themselves cite CI Web of Science papers, and to what extent other, non-CI documents.

Table 1 Ouput and WoS dependency of top and peer institutes.
(core universities in **bold** and red)

Top Institute	P	p (f)	Internal Coverage
HEC Paris	217	90.25	67%
Imperial College London	408	165.51	58%
INSEAD Paris	253	100.51	61%
King's College London	161	73.02	50%
London Business School	400	169.07	65%
London School of Economics and Political Science	1006	471.68	50%
Universita Pompeu Fabra	295	122.46	56%
University College London	534	213.18	54%
University of Cambridge	558	235.76	49%
University of Oxford	947	465.36	47%
University of Zurich	367	164.69	61%
Peer Institute			
Aarhus University	296	138.32	59%
Carlos III Madrid	295	146.99	59%
Durham University	152	67.58	55%
Erasmus University Rotterdam	1163	472.02	65%
Gent University	232	92.56	67%
Georg August University Göttingen	128	52.67	52%
Goethe University Frankfurt	265	117.21	57%
Humboldt - Universitat zu Berlin	149	65.01	55%
KU Leuven	455	183.39	56%
Lancaster University	207	91.04	53%
Linköping University	38	16.83	52%
Ludwig-Maximilians Universitat Munchen	337	129.13	59%

Peer Institute	P	p (f)	Internal Coverage
Lund University	214	97.66	51%
Maastricht University	480	194.73	64%
Stockholm University	276	132.27	54%
The University of Warwick	529	225.15	54%
Tilburg University	752	291.76	64%
Trinity College Dublin	82	35.21	41%
Universita Bocconi	415	163.47	61%
Universität Bonn	275	122.80	62%
Universität Mannheim	351	140.97	60%
University Catholique de Louvain	294	114.71	59%
University of Amsterdam	743	300.69	61%
University of Bergen	121	49.23	55%
University of Bologna	272	120.23	57%
University of Bristol	194	86.81	55%
University of Copenhagen	274	120.38	54%
University of Groningen	479	191.35	60%
University of Kent	94	43.17	49%
University of Milan	90	37.89	47%
University of St. Gallen	199	86.84	65%
Uppsala University	186	94.59	51%
Utrecht University	317	150.50	52%
VU University	654	246.39	60%

The overall internal coverage results from **table 1** show that the institutes under analysis range from some 70% to some 50%. Whenever the internal coverage moves in the direction of 50% it is important to realize that results wil become increasingly fragile, as the importance of non WoS-covered work is becoming as important as WoS-covered publications.

To a large extent this is applicable to 'Trinity College Dublin', here the internal coverage is so low that we suspect that no robust analysis can be performed. 'Utrecht University' also sports an internal coverage that is bound to yield less robust analysis scores, although the impact of this 'core' institute on the basis of what we are able to see within a WoS-based analysis is very high, as we will come to see.

3 Results

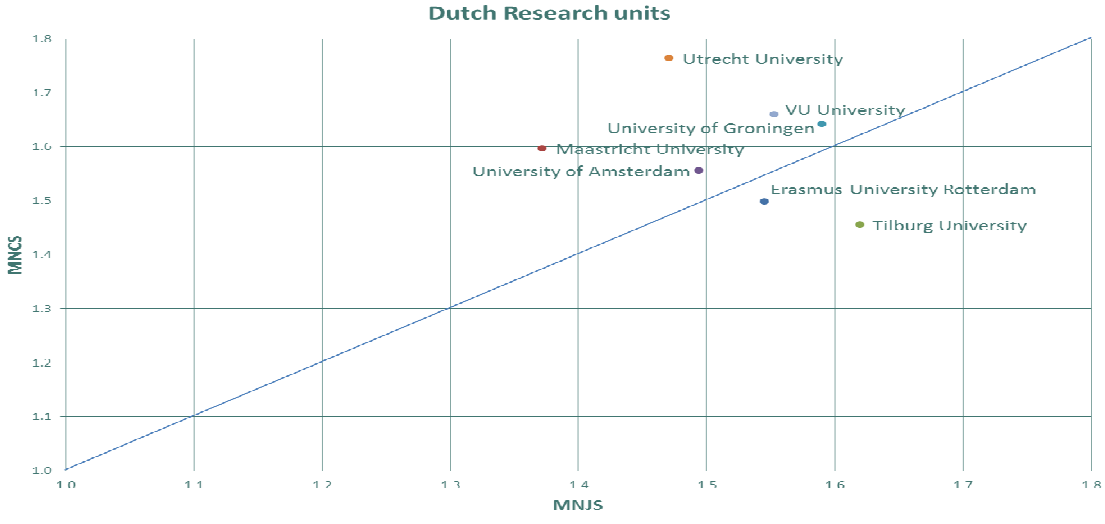
In this chapter, the results of the performance analysis for the Dutch universities 'economics & business' departments and its benchmark institutes as a whole are reported. All relevant underlying data is provided in an Excel sheet as listed in **Appendix II**.

3.1 MNCS versus MNJS.

First we would like to establish how the field delineation for the economy and business category on the basis of selected journals relates to the performance of the selected core institutes. This is laid down in **figure 1.** We can see here that the impact generated by all the papers in the journals to which a particular institute contributes (MNJS), is less than the average impact of the papers of those institutes themselves (MNCS) for all but two universities ('Tilburg University' and 'Erasmus University Rotterdam').

This means that overall the institutes themselves have an impact that is above that of the mix of journals they publish in. As a rule of thumb, papers that are published in higher impact journals generate a higher impact themselves. Partly because high impact journals tend to publish more high quality work and partly because a high impact journal is more visible and therefore the work in it tends to be read and used more often, which yields in return, more citations. In this case the bulk of the institutes contribute to the impact of the journal mix more than they benefit from it as the position of the institute labels leans to the MNCS side of the graph, where they would be exactly the same if positioned on that line.

Figure1. MNCS and MNJS comparison



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It is striking that the institute that publishes in the most highly cited journal-mix ('Tilburg University') within the context of a field delineation through journals selected, has the lowest Mncs. This institute does not enjoy the full benefit of publishing in such high impact journals. On average the citation impact of this institute is consistently below that of the journals it publishes in. It gets its work accepted in very high quality journals but doesn't cash the full potential citation returns. The same goes, be it to a lesser extent, for 'Erasmus University Rotterdam'.

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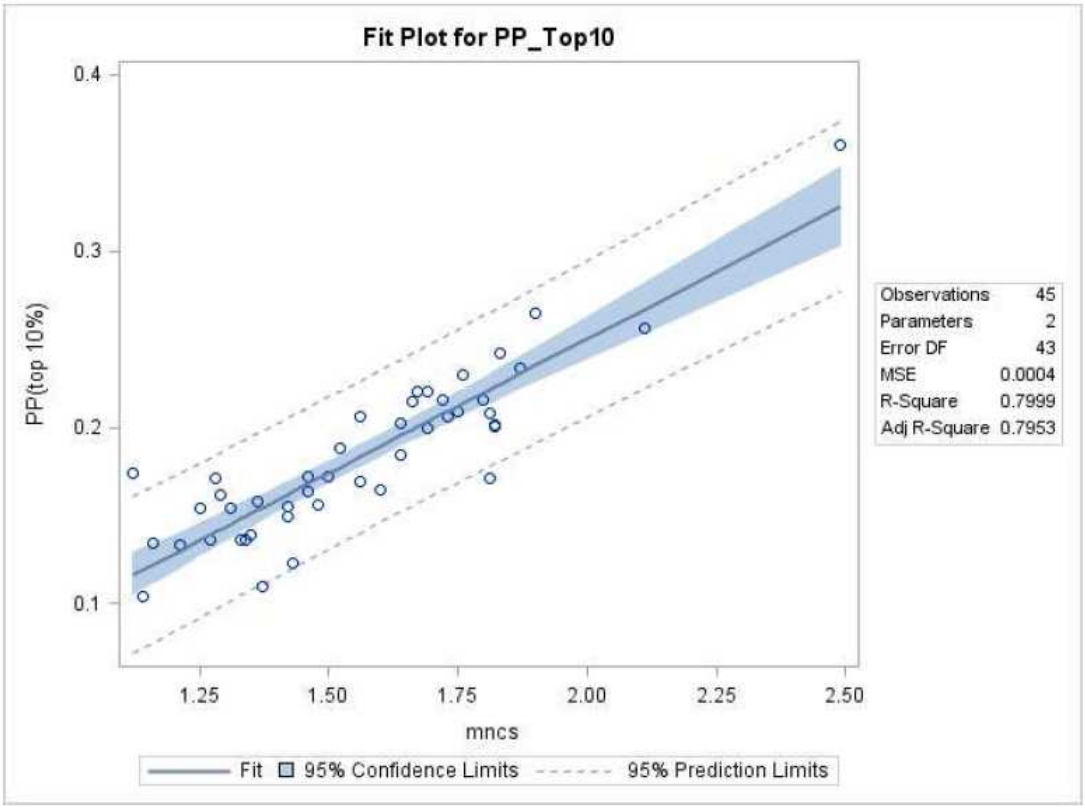
3.2 Goodness of fit between MNCS and PP(top 10%).

Since we have two important indicators to measure citation performance (MNCS and the PP(top 10%), we will establish the relation between these two in **figure 2.** On the one hand is the MNCS sensitive to outliers (extremely highly cited papers). On the other hand the PP(top-10%) is binary, a paper does or does not belong to the top in its field. These two indicators complement one and another very well. This is illustrated in the graph beneath. We can see that the correlation (R-squared) between these two indicators is quite high and has a linear regression structure, meaning that overall, the higher the MNCS the higher the proportion of PP(top 10%) cited publications. However, it also shows that there are outliers to this overall relation. Some observations fall outside of the 95% confidence limit and some come very close to the outer limits of it. This gives rise to the conjecture that if we present graphs using one or the other indicator, results will not paint the exact same picture. Therefore, we have chosen to present the positioning graphs using both indicators separately in accordance with the overall recommendations in the introduction.

Figure 2. Goodness of fit between MNCS and PP(top 10%)



3.3 *Visual representation of the landscape.*

Within the visual representations of the comparative postions of the institutes, world average for the impact measure is always used as the bottom value.
The positioning of the Dutch economy institutes compared to the top benchmark institutes is shown in **figure 3** and **figure 4** (Core institutes presented in red).

Figure 3. Dutch economic consortium institutes with Top benchmarks MNCS

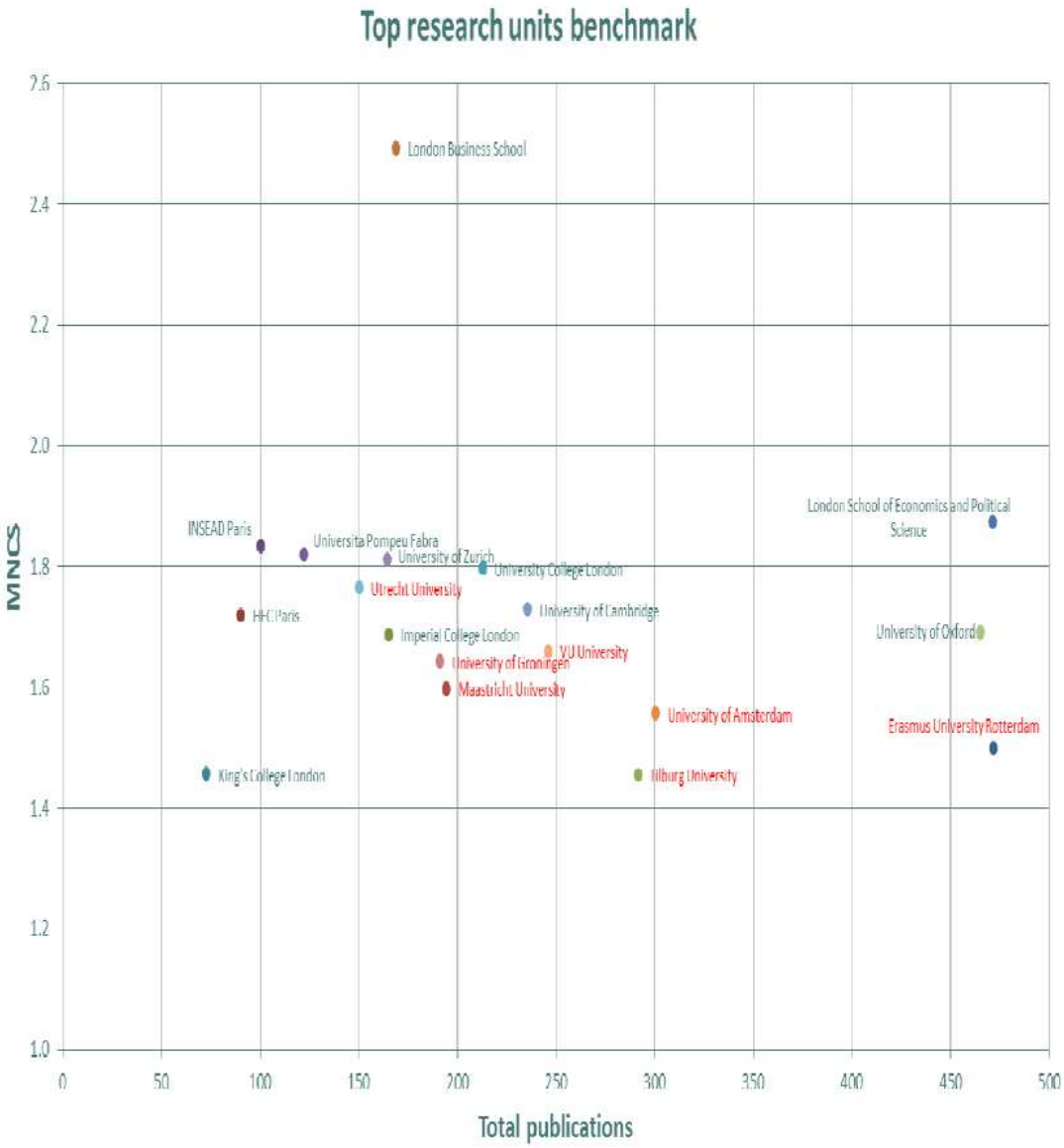
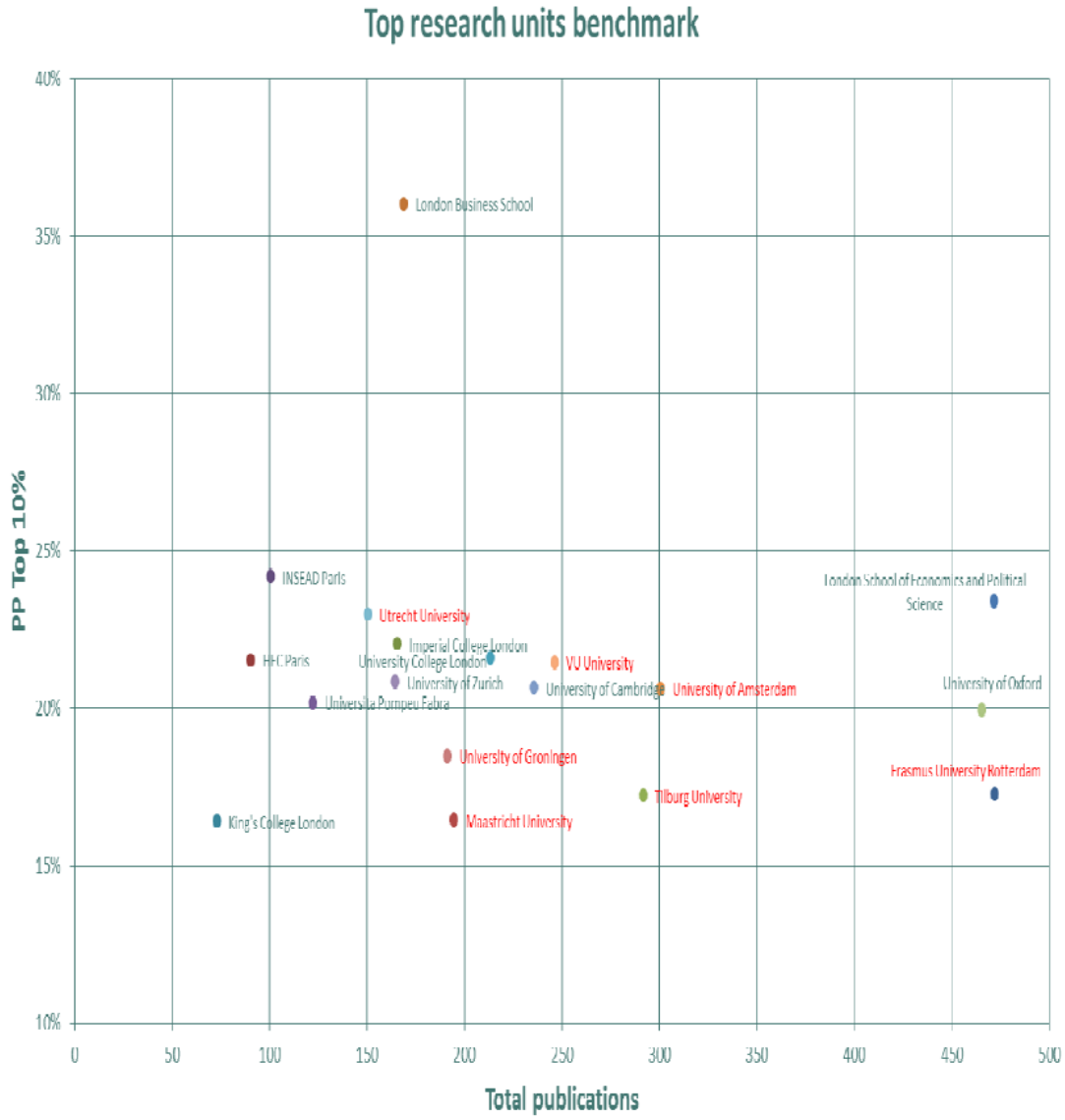


Figure 4. Dutch economic consortium institutes with Top benchmarks PP(top 10%)



With regard to the MNCS, the core institutes act below the level reached by the top institutes, roughly on a par with King's College London. Whereas within the PP(top 10%) impact and high visibility, although the overall impression is the same, the 'VU University' and, even more clearly, 'Utrecht University' attain a level that is comparable with roughly the middle part of that distribution. 'London business school' is in this analysis the absolute top.

The positioning of the Dutch economy institutes compared to the peer benchmark institutes is shown in **figure 5** and **figure 6** (Core institutes presented in red).

Figure 5. Dutch economic consortium institutes with peer benchmarks MNCS

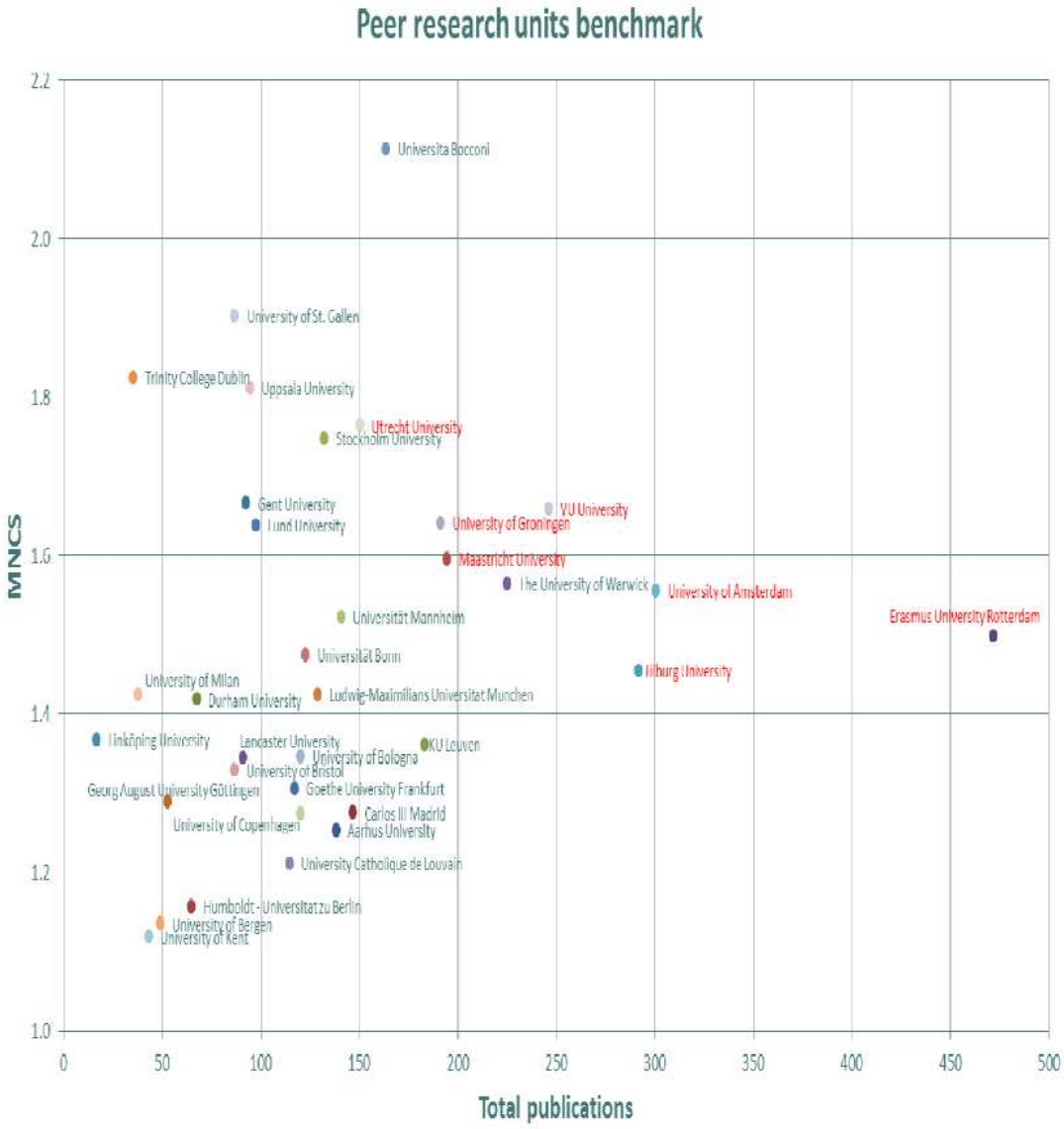
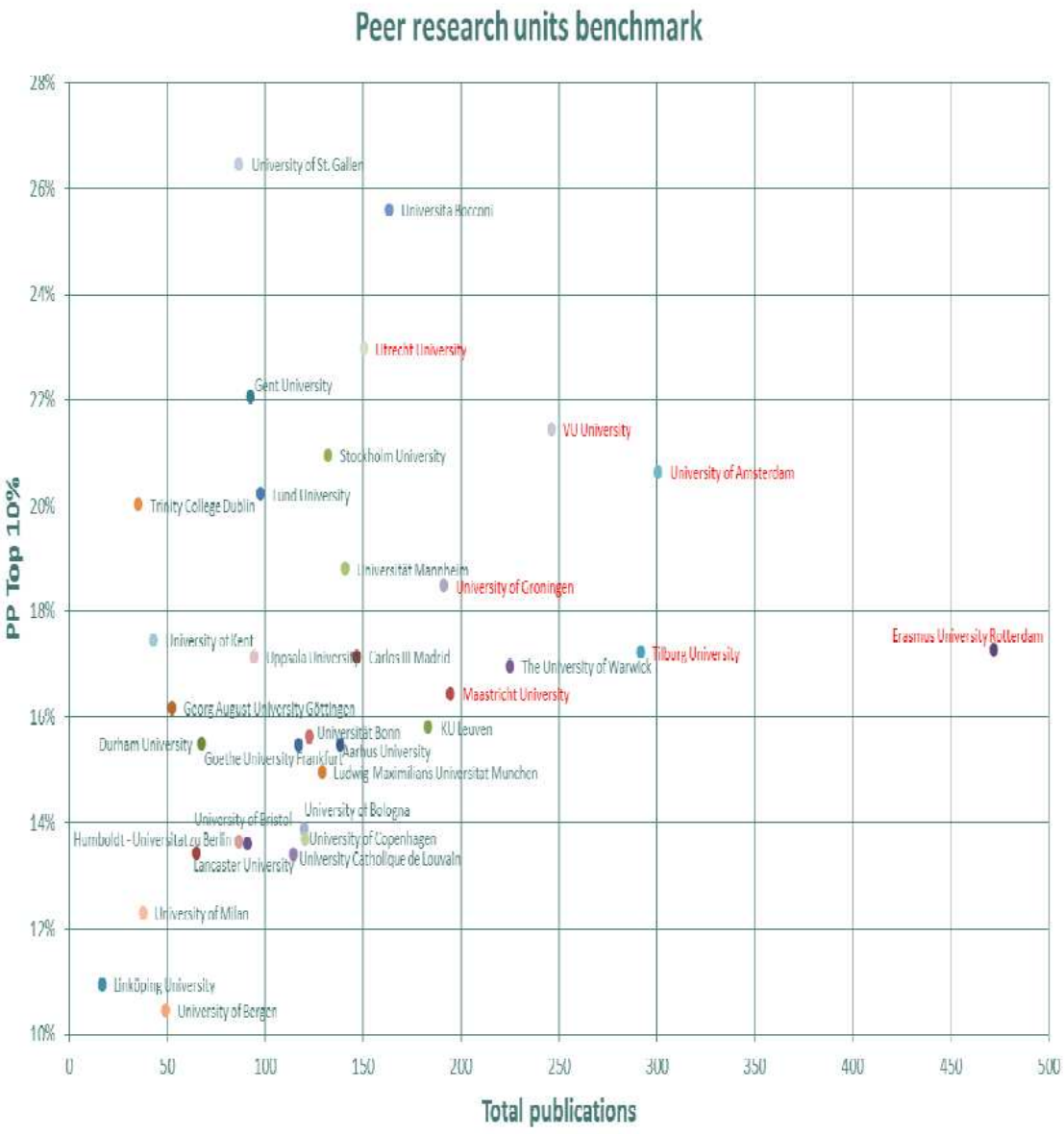


Figure 6. Dutch economic consortium institutes with peer benchmarks PP(top 10%)



If we were to divide **figure 5** in three tiers, lower (MNCS between 1 and 1.4) middle (MNCS between 1.4 and 1.8) and higher (MNCS between 1.8 and 2.2) the core institutes would be positioned in the middle tier of the benchmarks. Taking into consideration the decreasing density within the middle and higher tiers, we can safely say the core research units outperform the majority of the benchmarks. Even the lowest scoring 'core' institute 'Tilburg University' outperforms 17 out of 34 research units mapped.

To a large extend the same goes for the PP(top 10%) (**figure 6**), where 'Tilburg University' is positioned in the same way, only here the lowest scoring core research unit is 'Maastricht University' that outperforms 16 out of 34 institutes mapped. Within the PP(top 10%) impact and visibility index the core institutes perform somewhat better than within the MNCS. This is especially visible for 'Utrecht University', which is outperformed by four peers within the MNCS map but only by two peers if the PP(top 10%) is used. The two universities 'Universita Bocconi' and 'University of St. Gallen' that consistently outperform 'Utrecht University', have impact scores that are so high they would be perfectly at home within the top institute category. The benchmarked group is doing well in that it performs in both representations at the level of some 1.5 to some 2 times over world average.

Conclusion

We analyzed a core of Dutch Universities within the scientific categories of 'economy' and 'business' by comparing them to both 'top' and 'peer' institutes active in this field. The institutes' names were provided by the Dutch consortium of universities. This consortium also provided us with a list of journals that delineates the scientific field category of 'economy' and 'business'.

On the basis of this selection we analyzed the impact- and visibility performance of the 'core' Dutch institutes against both the 'top'- and the 'peer' benchmarks. We decided to use both the PP(top 10%) and the MNCS indicator on the basis of regression analysis which shows the level of convergence between the two to be high but not fitted closely enough to decide in favor of one or the other.

We found however that by and large the overall impression was the same for both indicators. When the core institutes are compared to top institutes, they are clearly in the lower part of the distribution. 'Utrecht University' is roughly on a par with the performance of 'top' universities as is to a lesser extent the 'VU University'. The rest of the benchmarked institutes bring up the lower end of the performance when compared to 'top' institutes, but the difference is not unbridgeable.

Compared to the peer universities, the core performs in the higher part of the distribution, outperforming the larger part of the peer institutes. This is stronger in the PP(top 10%) impact and visibility- than in the MNCS impact indicator. Here again, both the 'Utrecht University' and 'VU University' are the strongest contenders within the core institutes and act clearly in the top of the peer group. 'University Utrecht' is outperformed within the peer group only by universities that would be very well situated within the top performing research units category.

It must be noted here than when we talk about high(er) or low(er) this is within the context of high impact indicators throughout. The impact and visibility performance of all the institutes under consideration in this report scored consistently above- to very highly above world average. However, 'Tilburg University ' and 'Erasmus University Rotterdam' fail to harvest the potential benefits of the highly cited and highly visible journal-mix they publish in.

Acknowledgments

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Waltman, L., van Eck, N.J.,van Leeuwen, T.N., Visser, M.S., van Raan, A.F.J. (2011b)., Towards a new crown indicator: An empirical analysis. *Scientometrics*, 87 (3), 467-481.

Appendix I

To illustrate the calculation of the MNCS indicator, we consider a hypothetical research group that has only five publications. **Table 0** provides some bibliometric data for these five publications. For each publication, the table shows the scientific field, to which the publication belongs, the year in which the publication appeared, and the actual and the expected number of citations of the publication. (For the moment, the last column of the table can be ignored.) The five publications are all of them document type article. Citations have been counted using a variable-length citation window.

As can be seen in the table, publications 1 and 2 have the same expected number of citations. This is because these two publications belong to the same field and have the same publication year and the same document type. Publication 5 also belongs to the same field and has the same document type. However, this publication has a more recent publication year, and it therefore has a smaller expected number of citations. It can further be seen that publications 3 and 4 have the same publication year and the same document type. The fact that publication 4 has a larger expected number of citations than publication 3 indicates that publication 4 belongs to a field with a higher citation density than the field in which publication 3 was published. The MNCS indicator equals the average of the ratios of actual and expected citation scores of the five publications. Based on Table 1, we obtain

$$\text{MNCS} = \frac{1}{5}\left(\frac{7}{6.13}+\frac{37}{6.13}+\frac{4}{5.66}+\frac{23}{9.10}+\frac{0}{1.80}\right) = 2.08$$

Hence, on average the publications of our hypothetical research group have been cited more than twice as frequently as would be expected based on their field, publication year, and document type.

Table 0: Bibliometric data for the publications of a hypothetical research group.

Publication	*Field*	*Year*	*Actual citations*	*Expected citations*	*Top 10% threshold*
1	Surgery	2007	7	6.13	15
2	Surgery	2007	37	6.13	15
3	Clinical neurology	2008	4	5.66	13
4	Hematology	2008	23	9.10	21
5	Surgery	2009	0	1.80	5

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To illustrate the calculation of the PP(top 10%) indicator, we use the same example as we did for the MNCS indicator. **Table 0** shows the bibliometric data for the five publications of the hypothetical research group that we consider. The last column of the table indicates for each publication the minimum number of citations needed to belong to the top 10% of all publications in the same field and the same publication year and of the same document type.[3] Of the five publications, there are two (i.e., publications 2 and 4) whose number of citations is above the top 10% threshold. These two publications are top 10% publications. It follows that the PP(top 10%) indicator equals

$$PP_{top\,10\%} = \frac{2}{5} = 0.4 = 40\%$$

In other words, top 10% publications are four times overrepresented in the set of publications of our hypothetical research group.

[3] If the number of citations of a publication is exactly equal to the top 10% threshold, the publication is partly classified as a top 10% publication and partly classified as a non-top-10% publication. This is done in order to ensure that for each combination of a field, a publication year, and a document type we end up with exactly 10% top 10% publications.

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Appendix II

The following files that were sent with the report contain the underlying data on which the tables and graphs in the report were based:

Overall_results.xlsx

In which the following sheets give the underlying data:

Results top Main	Main figures for top institutes.
Results top total	All figures for top institutes.
Results peer main	Main figures for peer institutes.
Results peer total	All figures for peer institutes.
Coverage	WoS internal coverage figures for all institutes involved.

Peer Institutes Indicators Overview table (percentages rouded up)

Year	Unit	P	MCS	TCS	MNCS	MNJS	TNCS	PP (top 10%)	PP (uncited)	Proportion self citations	PP (collab)	PP (int collab)	Internal coverage
2008 - 2013	Aarhus University	138.32	5.99	828.89	1.25	1.29	173.35	15%	25%	14%	52%	44%	59%
2008 - 2013	Carlos III Madrid	146.99	6.70	985.31	1.28	1.34	187.48	17%	20%	8%	50%	37%	59%
2008 - 2013	Durham University	67.58	7.63	515.44	1.42	1.36	95.84	15%	16%	15%	56%	41%	55%
2008 - 2013	Erasmus University Rotterdam	472.02	7.98	3766.10	1.50	1.55	707.53	17%	16%	17%	61%	40%	65%
2008 - 2013	Gent University	92.56	7.34	679.49	1.67	1.55	154.21	22%	16%	23%	55%	40%	67%
2008 - 2013	Georg August University Göttingen	52.67	5.66	298.17	1.29	1.33	67.95	16%	25%	25%	54%	36%	52%
2008 - 2013	Goethe University Frankfurt	117.21	6.35	744.42	1.31	1.39	153.15	15%	19%	15%	58%	44%	57%
2008 - 2013	Humboldt - Universitat zu Berlin	65.01	4.79	311.39	1.16	1.17	75.24	13%	22%	14%	52%	35%	55%
2008 - 2013	KU Leuven	183.39	6.43	1178.37	1.36	1.39	249.72	16%	18%	18%	65%	52%	56%
2008 - 2013	Lancaster University	91.04	7.37	671.29	1.34	1.46	122.44	14%	19%	14%	52%	36%	53%
2008 - 2013	Linköping University	16.83	7.56	127.33	1.37	1.42	23.03	11%	16%	10%	47%	20%	52%
2008 - 2013	Ludwig-Maximilians Universitat Munchen	129.13	5.30	684.38	1.42	1.45	184.00	15%	21%	17%	70%	45%	59%
2008 - 2013	Lund University	97.66	8.52	831.87	1.64	1.45	160.01	20%	20%	12%	42%	30%	51%
2008 - 2013	Maastricht University	194.73	7.92	1541.44	1.60	1.37	310.93	16%	15%	12%	63%	49%	64%
2008 - 2013	Stockholm University	132.27	8.28	1095.16	1.75	1.60	231.26	21%	19%	10%	45%	31%	54%
2008 - 2013	The University of Warwick	225.15	7.52	1692.36	1.56	1.49	352.20	17%	17%	11%	63%	44%	54%
2008 - 2013	Tilburg University	291.76	6.97	2033.88	1.46	1.62	424.52	17%	17%	14%	74%	57%	64%
2008 - 2013	Trinity College Dublin	35.21	8.94	314.81	1.82	1.65	64.24	20%	19%	11%	57%	42%	41%
2008 - 2013	Universita Bocconi	163.47	10.71	1751.40	2.11	1.63	345.40	26%	15%	8%	69%	53%	61%
2008 - 2013	Universität Bonn	122.80	6.47	794.86	1.48	1.26	181.13	16%	21%	16%	57%	39%	62%
2008 - 2013	Universität Mannheim	140.97	7.01	988.73	1.52	1.54	214.62	19%	17%	10%	63%	49%	60%
2008 - 2013	University Catholique de Louvain	114.71	5.24	601.31	1.21	1.31	138.95	13%	21%	16%	76%	66%	59%
2008 - 2013	University of Amsterdam	300.69	7.50	2254.16	1.56	1.49	467.76	21%	16%	15%	64%	43%	61%
2008 - 2013	University of Bergen	49.23	5.88	289.64	1.14	1.19	55.91	10%	21%	23%	63%	44%	55%

Year	Unit	P	MCS	TCS	MNCS	MNJS	TNCS	PP (top 10%)	PP (uncited)	Proportion self citations	PP (collab)	PP (int collab)	Internal coverage
2008 - 2013	University of Bologna	120.23	6.81	819.24	1.35	1.36	161.88	14%	16%	13%	63%	46%	57%
2008 - 2013	University of Bristol	86.81	6.71	582.53	1.33	1.43	115.40	14%	14%	16%	55%	25%	55%
2008 - 2013	University of Copenhagen	120.38	5.77	694.67	1.27	1.34	153.37	14%	20%	18%	52%	41%	54%
2008 - 2013	University of Groningen	191.35	8.54	1634.22	1.64	1.59	314.13	18%	14%	14%	64%	43%	60%
2008 - 2013	University of Kent	43.17	5.56	239.92	1.12	1.41	48.31	17%	22%	20%	63%	37%	49%
2008 - 2013	University of Milan	37.89	4.92	186.42	1.43	1.36	54.00	12%	14%	15%	60%	36%	47%
2008 - 2013	University of St. Gallen	86.84	10.04	872.01	1.90	1.67	165.24	26%	16%	11%	55%	49%	65%
2008 - 2013	Uppsala University	94.59	7.98	754.77	1.81	1.58	171.29	17%	20%	13%	40%	25%	51%
2008 - 2013	Utrecht University	150.50	9.60	1445.44	1.76	1.47	265.43	23%	13%	18%	55%	25%	52%
2008 - 2013	VU University	246.39	7.82	1926.27	1.66	1.55	408.87	21%	14%	16%	65%	40%	60%

Top Institutes Indicators Overview table (percentages rouded up)

Year	Unit	P	MCS	TCS	MNCS	MNJS	TNCS	PP(top 10%)	PP (uncited)	Proportion self citations	PP (collab)	PP (int collab)	Internal coverage
2008 - 2013	HEC Paris	90.25	9.14	824.88	1.72	2.02	155.17	22%	14%	8%	70%	62%	67%
2008 - 2013	Imperial College London	165.51	9.48	1569.02	1.69	1.55	279.10	22%	10%	14%	68%	51%	58%
2008 - 2013	INSEAD Paris	100.51	11.32	1137.89	1.83	1.89	184.31	24%	11%	8%	69%	66%	61%
2008 - 2013	King's College London	73.02	8.13	593.50	1.46	1.46	106.30	16%	15%	16%	48%	25%	50%
2008 - 2013	London Business School	169.07	14.16	2393.66	2.49	2.18	421.32	36%	7%	7%	69%	63%	65%
2008 - 2013	London School of Economics and Political Science	471.68	8.30	3913.82	1.87	1.74	883.46	23%	16%	10%	49%	40%	50%
2008 - 2013	Universita Pompeu Fabra	122.46	7.84	960.42	1.82	1.70	222.76	20%	12%	9%	70%	49%	56%
2008 - 2013	University College London	213.18	8.65	1844.65	1.80	1.69	382.86	22%	14%	11%	65%	47%	54%
2008 - 2013	University of Cambridge	235.76	8.98	2116.46	1.73	1.61	407.33	21%	13%	12%	60%	42%	49%
2008 - 2013	University of Oxford	465.36	7.70	3581.81	1.69	1.60	786.38	20%	16%	11%	50%	38%	47%
2008 - 2013	University of Zurich	164.69	8.47	1394.29	1.81	1.65	298.10	21%	18%	11%	57%	42%	61%