

**Master Econometrics and Management Science
Erasmus University Rotterdam**

*Report of the limited programme assessment
3 and 4 November 2022*

Colophon

Programme

Erasmus University Rotterdam

Master Econometrics and Management Science

Location: Rotterdam

Mode of study: fulltime

Croho: 60079

Specialisations: Business Analytics and Quantitative Marketing
Econometrics
Analytics and Operations Research in Logistics
Quantitative Finance

Result of institutional assessment: positive

Committee

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The committee was presented to the NVAO for approval.

The assessment was conducted under responsibility of

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This document is best printed in duplex

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Summary

On 3 and 4 November 2022 an AeQui committee assessed the master programme in Econometrics and Management Science of Erasmus University Rotterdam. The overall judgement of the committee is that the quality of the programme is positive, and therefore **meets the standard**.

Intended learning outcomes

Based on the interviews and the examination of underlying documentation, the committee concludes that the intended learning outcomes tie in with (inter)national requirements for this field. All intended learning outcomes are covered in the programme and the intended learning outcomes are aligned with the Dublin descriptors. The programme's research driven orientation is very well reflected in the intended learning outcomes. The programme also maintains an explicit quantitative approach to research. The committee assesses that the intended learning outcomes **meet the standard**.

Teaching-learning environment

The committee concludes that the programme enables students to realise the intended learning outcomes. The intended learning outcomes are translated in learning goals which are stipulated in the course guide and syllabus.

The research orientation of the programme is reflected in its structure and content. The programme is explicitly tied in with the research of the lecturers involved and research skills are addressed throughout the programme. The small-scale seminars allow for in-depth discussions of research and application of knowledge and skills. The programme is quite demanding. The literature used is adequate and up-to-date.

The international name of the programme is appropriate. The international character of the programme is reflected in the international profile of the staff involved, the international students attending (the international track) and the international character of the economic field studied. The programme has a language policy in place for lecturers. In addition, lecturers involved are experienced in English-language teaching to students from diverse backgrounds.

The legal enrolment criteria are applicable to the programme. The programme has a sufficient guidance system for students in place that matches the independence expected of students in a master programme. Lecturers are competent, qualified and enthusiastic. The committee appreciates the international character of the staff and that lecturers are active in (international) research.

Students are informed about the programme through the online learning environment which is clearly structured and informative. The committee concludes that the programme **meets this standard**.

Student assessment

An adequate system of assessment is in place. The quality assurance of the assessment system is solid and effective measures are taken to guarantee the validity, reliability and transparency of the assessments. These include using assessment specification tables, the four-eye principle, assessment criteria and written feedback. The level of the different assessments studied by the committee was sufficient. An appropriate variety in forms of assessment is used, and in most courses two forms of assessments are used.

The examination board is active in safeguarding the quality of the assessments and in preventing plagiarism. The examination board annually checks the quality of the theses and other assessments. The committee concludes that the programme **meets this standard**.

Achieved learning outcomes

The programme has an adequate thesis process in place. In assessing students' master theses, two examiners are involved and a rubric is used.

Based on the studied theses, the committee is of the opinion that the level of the graduates is good and that students regularly achieve more than the required master's level. The quantitative approach to

research addressed in the intended learning outcomes and programme, is reflected in the studied theses. The technical quality is quite high and up to or above the standard. In many of the studied theses, students develop and apply novel tools. The committee notes that the final written feedback in the thesis evaluation form is quite limited. The committee concludes that the programme **meets this standard**.

Recommendations

In order to bring the programme to an even higher level of quality in the future, the committee recommends the following:

- to align the content of the syllabuses and course guides;
- to be more sensitive towards intercultural differences between students and lecturers and to ensure that these differences are addressed in the programme.

All standards of the NVAO assessment framework (2018) are assessed positively; hence the committee awards a positive recommendation for the accreditation of the master programme in Econometrics and Management Science of Erasmus University Rotterdam. The committee concludes that the overall assessment of the programme **meets the standard**.

On behalf of the entire assessment committee,
Utrecht, March 2023

Peter Schotman
Chair

Titia Buising
Secretary

Introduction

This report reflects the site visit of the master programme in Econometrics and Management Science of Erasmus University Rotterdam. The programme prepares students to independently apply econometric and management science techniques to complex real-life problems and to develop new models.

The institute

The programme is part of Erasmus School of Economics (ESE), part of Erasmus University Rotterdam (EUR). The mission of EUR is to make a positive impact on societal challenges. EUR strives to understand and make progress towards solving complex societal challenges, with alignment in its core activities of education and research and in close cooperation with local and global partners.

ESE offers three bachelor programmes, with two English tracks, and four master programmes. For each master's programme a pre-master programme is offered. Currently 6700 students are enrolled in ESE and approximately 155 FTE of lecturers are employed.

ESE comprises four academic departments: Applied Economics, Business Economics, Econometrics, and Economics. The departments provide the education of the different bachelor and master programmes. Each department is headed by a Department Director and supported by a secretariat. The Programme Management Education consists of the Programme Director, the three Bachelor Programme Managers, the Programme Manager Educational Innovation, Head Student Affairs, and the three Policy Officers Education. The Programme Management Education meets every two weeks to discuss and decide on current education matters.

ESE is currently developing a new strategic plan 2023-2027, including an adjusted educational vision and a renewed vision on assessment.

The programme

The master programme in Econometrics and Management Science is a full-time programme, amounting to 60 EC. The programme is taught in English. The programme offers four specialisations:

- Business Analytics and Quantitative Marketing;
- Econometrics;
- Analytics and Operations Research in Logistics (until 2022 known as Operations Research and Quantitative Logistics); and
- Quantitative Finance.

The programme has an international orientation. According to the self-evaluation report, this is reflected in the international student body, teaching by international academic staff and the use of international teaching and research materials. In academic year 2021 - 2022, 13% of the enrolling students in the foregoing programme were non-Dutch.

The master specialisations have a similar set-up, and include deepening knowledge through core courses (7 x 4 EC), applying, and integrating knowledge in a seminar (12 EC) and proof of knowledge and skills with the individual thesis (4 EC for the thesis proposal and 16 EC for the thesis).

In the previous accreditation process recommendations were made (for all programmes) to improve the information provided to students and to inform students more clearly and comprehensively about the thesis process and the thesis as-

assessment and align thesis processes. The committee noted that ESE acted on these recommendations by implementing a new digital learning and working environment. In this environment the information about exchange, thesis and internships is centralised and accessible for all students. In addition, the thesis process has been streamlined for all programmes (see also standard 4).

The assessment

Erasmus University Rotterdam assigned AeQui to perform a quality assessment of its master programme in Econometrics and Management Science. In close co-operation with the programme management, AeQui convened an independent and competent assessment committee. A preparatory meeting with representatives of the programme was held to exchange information and plan the date and programme of the site visit.

In preparing for the site visit, the assessment committee studied the self-evaluation report on the programme and reviewed a sample of student work. The findings were input for discussions during the site visit.

The site visit was carried out on 3 and 4 November 2022 according to the programme presented in attachment 2. No use was made of the (online) open consultation hour. The committee carried

out its assessment in relation to, and in consideration of, the cluster of programmes in which this programme is placed. The contextualisation of the programme within its cluster was conducted by the complete committee during the preliminary meeting and the final deliberations. The knowledge required for this was present in the committee.

The committee assessed the programme in an independent manner; at the end of the visit, the chair of the committee presented the initial findings of the committee to representatives of the programme and the institution.

In this document, the committee is reporting on its findings, considerations and conclusions according to the 2018 NVAO framework for limited programme assessment. A draft version of the report was sent to the programme management; its reactions have led to this final version of the report.

The programme will initiate and plan a development dialogue in the course of 2023. The results of this development dialogue will have no influence on the assessment presented in this report.

1. Intended learning outcomes

The committee concludes that the intended learning outcomes have been adequately concretised with regard to content, level and orientation and meet international requirements. The intended learning outcomes are generic and applicable to all specialisations. In addition, the intended learning outcomes reflect the Dublin descriptors. The programme is research driven, which is also reflected in the intended learning outcomes. The committee concludes that the programme meets the criteria for this standard.

Findings

All ESE master programmes share the same educational vision in which research and education are strongly connected.

In the master programme in Econometrics and Management Science students learn the necessary quantitative knowledge and skills to solve problems in economics and business. The aim is to provide high-quality academic training so that graduates can pursue careers in both private and public sectors or excel in research. Graduates should be able to independently apply existing econometric and management science techniques to complex real-life problems, including the execution and/or implementation of the techniques in computer programmes. Furthermore, graduates must be able to develop models to solve new problems.

The four specialisations mentioned in the introduction enable students to acquire deeper knowledge and understanding of a subfield in Econometrics and Management Science. The specialisations are organised by the ESE Econometric Institute, which also organises fundamental and practical research programmes in these subfields.

The specialisations each have a different focus. The Business Analytics and Quantitative Marketing specialisation focuses on developing models and techniques to convert big data into knowledge, find opportunities and predict behaviour. These models and techniques originate from statistics, econometrics, machine-learning or computer science. In the Econometrics specialisa-

tion, students gain in-depth knowledge of econometric theory and skills of advanced quantitative methods and techniques, to perform empirical econometric analysis, and to develop and apply new models. The Quantitative Finance specialisation focuses on econometric methods and skills that provide quantitative support in financial decision-making. In the Analytics and Operations Research in Logistics specialisation students learn how to tackle actual logistics problems 'from data to advice'. This involves designing a mathematical model, selecting an appropriate solution and implementing it as prototype software.

ESE notes that the research driven orientation of the programmes enables the programme to quickly incorporate new developments in economics and econometrics in the curriculum. The research driven orientation is also reflected in the intended learning outcomes. The intended learning outcomes of the foregoing programme address, for example, the ability to outline and define a problem with the chosen field of specialisation and to motivate choices based on up-to-date scientific and social insights, to specify, formulate and operationalise research questions in a systematic, valid and reliable manner, to select, develop and use relevant and up-to-date research methods, to find and efficiently and effectively use databases for data collection, to critically evaluate and apply up-to-date quantitative analysis methods, to develop and motivate new methods and models, and to formulate conclusions, the latter by considering premises, basic assumptions and the limitations and possibilities of the chosen methodology. In addition, recommenda-

tions have to be based on creativity and good insight into social and scientific standards and values.

The intended learning outcomes are based on the description of an economics degree programme as described in the Subject-specific Reference Framework for Economics (January 2016). The intended learning outcomes are the same for all four specialisations. The programme presented an overview that explains the translation of the Dublin descriptors into the intended learning outcomes. The programme also outlined the relation between the intended learning outcomes and the different components of each specialisation.

In 2021 ESE conducted a benchmark analysis for all programmes. This analysis was aimed at reviewing the validity of programmes, as well as the positioning and profiling relative to national and international peers, including the evaluation of the intended learning outcomes. The self-evaluation report notes that this did not lead to changes in the orientation and organisation of the programme. Lecturers noted during the site visit that input from the advisory board usually reflects their own ideas about current developments.

Input from the professional field is gathered through Advisory Boards, which mainly include

alumni. The Advisory Boards are directly connected to ESE's master programmes.

Considerations

Based on the interviews and the examination of underlying documentation, the committee concludes that the intended learning outcomes tie in with (inter)national requirements for this field.

Based on an overview of the relation between courses and intended learning outcomes, the committee notes that all intended learning outcomes are covered. The programme also provided insight in the alignment between the intended learning outcomes and the Dublin descriptors.

The committee notes that the programmes research driven orientation is very well reflected in the intended learning outcomes. The programme also maintains an explicit quantitative approach to research.

Based on the interviews and examination of the underlying documentation, the assessment committee establishes that the intended learning outcomes **meet the standard**.

2. Teaching-learning environment

The committee concludes that the programme enables students to realise the intended learning outcomes. The programme's focus on specialisation is reflected in the set-up of the programme. In addition, the research and quantitative orientation of the programme is reflected in the content and set-up of the specialisations. The committee notes that the content of different course documents such as course guide and syllabi can be more aligned. Students value the seminars. These allow for in-depth discussions and links them to professional practice. The staff is international, competent, enthusiastic and involved. Lecturers are active in research as well. The committee notes that the legal enrolment criteria are applicable to the programme. The committee concludes that the programme meets the criteria for this standard.

Findings

As mentioned in the introduction, all specialisations have the same set-up organised in five teaching blocks. This includes:

- deepening knowledge through seven core courses (4 EC each);
- deepening, applying, and integrating knowledge in a seminar case studies (12 EC); and
- proof of knowledge and skills with the individual thesis (4 EC for the proposal and 16 EC for the thesis).

All ESE master programmes offer a combination of core courses and small-scale seminars. The first focus on deepening knowledge and understanding of theory and methodology. The latter on applying and integrating knowledge and understanding.

The self-evaluation report notes that the core courses have a strong focus on acquiring and developing quantitative skills. This is apparent in, for example, in the Microeconometrics course that trains students in parameter estimation in panel data models and estimating treatment effects. This course is part of the Business Analytics and Quantitative Marketing and the Econometrics specialisation. These specialisations also comprise the Multivariate Statistics course, the Bayesian Econometrics course and the Topics in Advanced Statistics course. The Business Analytics and Quantitative Marketing specialisation also offer the Advanced Marketing Models course that

addresses the state-of-the-art econometric techniques that are useful in a marketing context to predict and understand the (collective) behaviour of individuals.

In the course Financial Derivatives, which is of the Quantitative Finance specialisation, students acquire in-depth knowledge of methods for computing the fair price of options and other derivative securities, and using these products for investment and hedging purposes. This specialisation also comprises courses such as Asset Pricing, Quantitative Methods in Fixed Income, Advanced Time Series Econometrics, and Portfolio Management.

The Analytics and Operational Research in Logistics specialisation contains courses such as the Stochastic Models and Optimisation course, the Mathematical Programming course, the Machine Learning course, and the Algorithm Design course.

The number of electives varies by specialisation. Students of the Econometrics specialisation can choose two electives from a selection of ten courses. The Quantitative Finance specialisation offers one elective: students can choose between Bayesian Econometrics in Finance or Machine Learning in Finance. The other two specialisations consist of a fixed programme without electives.

The seminars case studies focus on applying and integrating knowledge and understanding by using case studies. The self-evaluation report notes

that in the case studies, students work on a research project often brought forward by companies and are supervised in small groups of four or five students. These practical cases are analysed in several ways: focusing on problem formulation and modelling, and proposing and implementing solution methods. Companies are often involved in the supervision of the research groups and the case studies regularly include multiple company visits. The self-evaluation report notes that the seminars thus provide a link with practice and the future careers of students.

Seminars and core courses are also sometimes complemented by guest lectures given by professionals to help to discover and bridge the gap between theory and practice. The programme notes that the study association also has an important role in bridging this gap by organising activities that involve the professional field. This includes, for example, in-house days, recruitment and career events, as well as job market skills workshops and the Erasmus Recruitment Platform to match students and companies.

Other than academic skills, seminars and core courses also address communication skills and judgmental skills. Students are encouraged to discuss their reasoning and opinions in class as well as in writing. In addition, students are required to write (small) research reports or to give presentations. The programme offers also a honours programme: the master class programme 'Actuarial Sciences', in cooperation with Allianz.

During the site visit it was noted by management that for international students a refresher course will be developed on academic skills that are expected from them at ESE. In addition, extra information will be provided for all students to brush up on their mathematical and statistical skills.

The committee learned during the site visit that in general, student groups are currently mixed randomly. In doing so, the programmes want to ensure that students work together with students

from different backgrounds. With respect to addressing cultural diversity, it was noted by the programme management that this is also the responsibility of the study associations. It was mentioned that internationalisation was mainly focused on students' international career. In the future, cultural diversity will be addressed more actively.

Students and alumni the committee met with value the deepening of their knowledge and skills in the programme. In addition, the seminars allow for application of the knowledge learned and introduce students to companies. This can also lead to internships. Most students the committee met with incorporate an internship in their programme. Students and alumni also appreciate the demanding character of the programme.

Learning environment

The programme ties in with ESE's ambition to offer research oriented education. The ESE educational vision also emphasises an academic community of students and lecturers to create, disseminate and apply scientific knowledge; face-to-face contact and interaction between students and lecturers; and the use of technology as a means, not an end in itself.

The seminars comprise intensive, interactive and small-scale teaching, and guidance. In the seminars' case studies students work and are supervised in groups of four to five students on practical cases. The seminars are highly valued by students.

The site visit also revealed that impact learning is a university wide strategic theme. For the ESE programmes this implies that students will be enabled during their studies to get more in touch with practice and to have an impact there. Moreover, in this way students are even more confronted with contemporary issues.

Discussion with management on social safety revealed that this is currently part of the strategy sessions with the departments in which the core

values including a safe working environment is discussed. Moreover, an ESE confidant is available.

Incoming students

The legal enrolment criteria apply to the programme. ESE follows Nuffic's standards for establishing the level of international diplomas. International applicants must also show proficiency in the English language (with a TOEFL/ IELTS test). For students who do not qualify for direct admission a one-year pre-master programme is available.

Staff

In line with the educational vision, academic staff members are involved in both research (40% of time) and teaching (60%). About 80% of ESE's academic staff is affiliated with Tinbergen Institute (TI) or the Erasmus Research Institute of Management (ERIM), or both.

Within ESE over 40% of the academic staff (excluding PhD-candidates) has a non-Dutch nationality. ESE employs lecturers from 34 different countries. Lecturers must have at least C1 level of English, based on the Common European Framework of Reference for Languages (CEFR). ESE has its own language policy and offers language courses.

ESE's Service Level Agreement Education, which is updated yearly, describes the basic requirements for each course, including guidelines for contact hours, group size, active learning elements and interactive education, as well as lecturers' qualifications, examinations, and language requirements for education in the programmes.

Educational achievements and course evaluations are discussed in the annual performance and de-velopment interviews with faculty members. A good teaching performance is also a requirement to get tenure. To this end, teaching performance is assessed by class visits and reviews from peers and the course evaluation. For the master programme in

Econometrics and Management Science, class visits are held regularly, the committee learned during the site visit.

90% of ESE staff obtained a university teaching qualification. Individual training is available as well as so called micro-labs. The latter are two-to-four-hour workshops on various topics, such as assessment, delivery of teaching and innovating education. In addition, the ESE Innovation Hub provides lecturers with support in using digital tools, including interactive elements in large-scale plenary lectures, in enhancing personal online learning or in building the Canvas pages. ESE also organises so called Education Afternoons, in which lecturers share their best practices with educational innovation. Examples are dealing with free-riding behaviour, how to integrate sustainability in courses and how to stimulate peer feedback. New lecturers are mentored by a senior lecturer. ESE employs about 155 FTE of lecturers.

The self-evaluation report notes that the increased student numbers could cause a peak workload for thesis supervisors in academic years 2023-2024 and 2024-2025. One of the measures to reduce the workload has been the initiation of a thesis working group in 2021 to further optimise thesis and supervision processes with special attention to workload reduction, for academic supervisors and support staff.

During the site visit the committee discussed the increasing workload of lecturers. The renewed thesis and supervision process is expected to reduce the workload. The introduction of a tenure track for lecturers can also reduce the general workload. Tenured lecturers have a PhD and sometimes a small research appointment.

For the foregoing programme, it was confirmed by lecturers that the workload is quite high. To decrease the workload, a budget has been made available to hire new colleagues.

Students the committee met with value the approachability of their lecturers. Students also indicated that their lecturers' English proficiency is good.

Guidance and student information

Students are primarily guided by their lecturers, during the courses and the small-scale seminars. In addition, students receive individual supervision in writing their thesis.

For guidance regarding personal problems ESE study advisers, study counsellors or university psychologists are available. ESE also organises different workshops and webinars on topics such as dealing with stress, uncertainties, time management, journal writing, connecting communication and collaboration etc. For students who experience difficulties in motivating themselves to work on the thesis a thesis group is available.

The site visit revealed that the programme committee does not discuss the evaluation results of individual courses unless there are big issues. It was also noted that each course is evaluated. The response rate is, however, very low. Improvements for the latter are currently being developed and piloted in 2023. Students noted that the programme acts upon their feedback.

Considerations

The committee concludes that the programme enables students to realise the intended learning outcomes. The intended learning outcomes are translated in learning goals which are stipulated in the course guide and syllabus. In reviewing courses on the digital learning environment and the accompanying syllabus and course guide, the committee noticed, however, that the information provided in these can be different. Moreover, the syllabi studied show different structures and design and are not always in line with the course guide. The committee recommends the programme to align the content of these documents.

The research orientation of the programme is reflected in its structure and content. The programme is explicitly tied in with the research of the lecturers involved and research skills are addressed throughout the programme. The small-scale seminars allow for in-depth discussions of research and application of the knowledge and skills. In addition, the seminars bring students into contact with professional practice, which is valued by students the committee met with. The committee concludes that the programme is quite demanding, which is appreciated by the students the committee met with. The committee observes that adequate and up-to-date literature is used in the programme.

Econometrics is an international field of study and work. The programme explicitly prepares students for careers in an international context. The international character of the programme is reflected in the international character of the research material studied, the international profile of the staff involved and the international students attending. The committee therefore concludes that the international name of the programme is appropriate. The programme has a language policy in place for lecturers. In addition, the committee establishes that the lecturers involved are experienced in English-language teaching to students from diverse backgrounds.

The committee notes that the broad diversity of the student body is not actively used for educating students about diversity, cultural differences and cultural competencies. The committee supports ESE's intention to establish a special committee on diversity that will investigate how to benefit more of this diversity, as well as to further strengthen staff and students' intercultural competencies.

The legal enrolment criteria are applicable to the programme. The programme has a sufficient guidance system for students in place that matches the independence expected of students in a master programme. The small-scale seminars and individual thesis supervision contribute to

this and if needed extra support from study advisors is available.

Lecturers are competent, qualified and enthusiastic. The committee appreciates the international character of the staff and that lecturers are active in (international) research.

Students are informed about the programme through the online learning environment. The short demonstration during the site visit showed that the online learning environment is clearly structured and informative.

Based on the interviews and examination of the underlying documentation, the committee establishes that the programme **meets this standard**.

3. Student assessment

The committee concludes that the programme has an adequate assessment system in place. The intended learning outcomes are at the basis of this system. Effective measures are taken to guarantee the validity, reliability and transparency of the assessments, by using assessment specification tables, the four-eyes principle, assessment criteria and written feedback. Students are satisfied with the variety assessment methods used. The examination board is effectively organised and safeguards the quality of the assessments and theses in an active manner. The committee values the random checks of the quality of assessments and theses. The committee concludes that the programme meets the criteria for this standard.

Findings

ESE's vision on assessment is leading for the programme's assessment policy and system. Alignment between the content and level of the learning objectives and the assessment at course level is an important premise in the vision. The vision is translated in ESE's examination policy, that describes the framework in which exams are developed and taken. This framework is worked out in detail in an Examination Protocol that provides guidelines and direction for lecturers with regard to examinations.

To guarantee the reliability and validity of exams, lecturers are expected to carry out peer review in the construction of exams. In addition, all exams are required to have assessment criteria to enhance the reliability and to ensure independence in the grading process. And assessment specification tables are used to provide insight into how a course is assessed.

Depending on the content and objectives of a course, one or more types of assessment are used, such as: assignments, mid-term tests, written examinations with open questions and oral examinations. Assignments include presentations, solving cases, the writing of a policy advice or (group or individual) papers, and group discussions. The different types of assessment are indicated in the assessment specification tables of courses and in the assessment overviews on programme level. The latter also includes the weighting of the different assessments used in the courses.

The set-up of assessment of courses is described in the course guide. During a block, students are provided with a sample examination, including indications of the answers. An inspection opportunity is obligatory for each exam.

The use of digital test software has increased in the past years, due to the Covid-19 pandemic. The programme notes that digital test software makes grading of written exams more efficient. The self-evaluation report also states that due to increasing student numbers possible capacity limits for on-campus examination might lead to alternative forms of assessment.

The requirements for examinations and grading are formalised in the Rules and Regulations of the Examination Board and in the aforementioned Service Level Agreement Education.

Examination board

The ESE examination board is responsible for safeguarding the quality of examinations and the final qualifications attained of all the ESE bachelor and master programmes. All academic departments and programmes are represented in the board. The examination board uses systematic monitoring and random checks to safeguard the quality of examination. This includes sample surveys of assessments and theses. The examination board documents its activities in an annual report. The Examination Monitor is used to monitor the quality of the assessments. The Examination Monitor provides a quick scan based on pass

rates and distortions in grade distributions (also compared to previous years).

During the site visit, the committee met with representatives of the examination board. It became clear that a two-year project has been set up on strengthening the safeguarding function of the examination board. And a new colleague focused on coordinating all safeguarding activities will be hired. In addition, external examiners are screened on their educational and research skills before being appointed as an examiner.

Regarding the statistical analysis of assessments, it was remarked that also student evaluations and evaluations by lecturers prove useful insights in the quality of assessments.

In the discussion about preventing and detecting plagiarism it was noted that students as well as lecturers are informed about the interpretation of plagiarism and group work. Moreover, lecturers are expected to discuss this with their students. The Thesis Workflow Process supports lecturers and students in this.

During the Covid-19 pandemic ESE used proctoring in the online exams. The students and representatives of the examination board the committee met with are very positive about this. Students noted that this ensures the value of their exams. Representatives of the examination board remarked that online exams and proctoring will be possible for students who, for example, due to

chronic illness, cannot come to campus for an exam.

Considerations

The committee concludes that an adequate system of assessment is in place. The quality assurance of the assessment system is solid and effective measures are taken to guarantee the validity, reliability and transparency of the assessments. These include using assessment specification tables, the four-eye principle, assessment criteria and written feedback.

In general, the level of the different assessments studied by the committee was sufficient. The committee also notes that an appropriate variety in forms of assessment is used. And that in most courses two forms of assessments are used (during the course and at the end of the course).

The examination board is active in safeguarding the quality of the assessments and in preventing plagiarism. The examination board annually checks the quality of the theses and other assessments. The committee also values the continuation of online exams for students that otherwise would not be able to take the exam on campus.

Based on the interviews and examination of the underlying documentation, the committee establishes that the programme **meets this standard**.

4. Achieved learning outcomes

Based on the studied documents and the interviews, the committee concludes that graduates of the master programme regularly achieve more than the required level and the intended learning outcomes. The committee concludes that the overall academic quality of the studied theses is high and agreed with the grades given. The committee observes that the quantitative approach to research that is addressed in the intended learning outcomes and programme, is reflected in the studied theses. The technical quality is quite high and up to or above the standard. The committee notes that in many of the studied theses, students develop and apply novel tools. The committee is of the opinion that the final written feedback in the thesis evaluation form is rather limited. The committee concludes that the programme meets the criteria for this standard.

Findings

The programme is finalised with the master thesis. In this individual thesis, students show that they are able to independently perform scientific research. The thesis has to address a topic related to the chosen master specialisation. The requirements for the thesis are described in the thesis manual.

With the thesis, students show that they have achieved all intended learning outcomes. Moreover, students demonstrate that they can:

- formulate a proper research question, which can be analysed using their knowledge of econometrics and/or operations research;
- decide upon the correct data and appropriate methodology to answer the research question;
- work independently;
- apply their econometric and/or operations research knowledge to do proper inference; and
- translate the results from their analysis to answer the research question and to report their research in a scientific report and a presentation.

The thesis manual notes that the focus of the thesis can be either theoretical, where the main contribution is developing new methodology in econometrics or operations research, or empirical, where the added value (mostly) comes from analysing a (new or existing) dataset to address a relevant economic question.

The thesis process is organised by a thesis coordinator for each specialisation. Students are informed about the thesis process and the thesis requirements by means of an introductory lecture, a thesis manual, and all thesis information is shared on the Canvas Thesis Hub of each programme.

During the thesis process students formulate their research topic, draft a thesis proposal, write their thesis and defend their thesis. Topics can be formulated by students themselves, are sometimes suggested by companies or may come from list of topics they can choose from. Students are matched to thesis supervisors based upon their topic. After approval of the topic, students write a thesis proposal. During the thesis process, feedback is given regularly by the thesis supervisors, both verbally in the supervision sessions and in writing via the Thesis Workflow. In accordance with the Service Level Agreement Education, either the thesis supervisor or the second assessor should hold a PhD, to ensure the academic quality of the thesis.

As mentioned in the introduction, the thesis process was changed in recent years for all bachelor and master programmes. This includes improving the online system used (Thesis Workflow) for guidance and handing in thesis and assessment, the introduction of fixed deadlines for handing in the thesis, the introduction of a Canvas Thesis Hub for each programme (to provide information centrally and timely), the introduction of thesis manuals for students and for supervisors and the

option for students to join a thesis group. In addition, thesis rubrics have been implemented and requirements of thesis supervisor's and second assessor are formalised in the aforementioned Service Level Agreement Education.

The thesis is assessed by a thesis committee consisting of the thesis supervisor and a second assessor. Both assess the thesis independently based on the rubrics. Through the Thesis Workflow System supervisors are able to keep track of students' progress, to communicate with students and to assess the thesis. The grade is determined after the student has presented and defended the thesis in a session in which both the supervisor and second assessor are present. At the end of this session the assessors provide feedback to the student on the quality of the thesis, the process and the grading.

During the site visit, the committee discussed the deadlines of the thesis with several representatives. The discussions showed that the introduction of fixed deadlines in the thesis process is a shift in trend from the past. And that new, more strict deadlines for the thesis and (new) deadlines for the thesis proposal, are currently debated on within ESE. The committee also learned that the interpretation of the fixed deadlines varies per programme. In the foregoing programme, students often add an internship to their programme or combine their thesis with an internship the committee learned during the site visit. The internship is, however, not a part of the programme and not assessed as such. Lecturers noted that students often combine the programme with a part-time job. Internships and working in practice usually lead to study delay, which the students the committee met with take for granted.

Lecturers noted during the site visit that a more detailed planning is part of students thesis proposal. This ensures that lecturers and students can make appropriate arrangements for supervision that also match the lecturers calendar.

The programme states that graduates from the master programme in Econometrics and Management Science work in many different sectors and mostly in large organisations. The majority (71 %) of graduates works for multinationals (>1.000 employees) and large international economic organisations such as the OECD and IMF. Some graduates continue their education as a Ph.D.-student at ESE or at another university in the Netherlands or abroad.

The programme involves alumni through a newsletter, social media platforms and a special website. In addition, alumni are invited for events and part of the Advisory Boards for the master programmes (see also standard 1). Alumni (currently 255) are also involved in the MentorMe platform for bachelor students.

Considerations

The committee concludes that the programme has an adequate thesis process in place. In assessing students' master theses, two examiners are involved and a rubric is used.

To assess whether students achieve the required master level and the intended learning outcomes, the committee studied 15 theses, representing the different specialisations. Based on this, the committee is of the opinion that the level of the graduates is good and that students regularly achieve more than the required master's level. The committee agreed with the grades given.

In general, the committee concludes that quantitative approach to research that is addressed in the intended learning outcomes and programme, is reflected in the studied theses. The technical quality is quite high and up to or above the standard. In many of the studied theses, students develop and apply novel tools. In addition, the committee is of the opinion that the final written feedback in the thesis evaluation form is quite limited.

Based on the interviews and examination of the underlying documentation, the committee establishes that the programme **meets this standard**.

Attachments

Attachment 1 Assessment committee

prof.dr. P.C. (Peter) Schotman	Peter Schotman is Professor of Empirical Finance at Maastricht University School of Business and Economics and research fellow of the Network for Studies on Pensions, Aging and Retirement (Netspar) in The Netherlands.
prof.dr. N. (Niels) Hermes	Niels Hermes is Professor International Finance and chair of the department Economics, Econometrics and Finance at the Faculty of Economics and Business of Groningen University.
em.prof.dr. E. (Eelke) de Jong	Eelke de Jong was Professor International Economics at Radboud University Nijmegen until October 2021.
prof.dr.ir. P.M.G. (Paula) van Veen-Dirks	Paula van Veen-Dirks is Professor Management Accounting, co-chair of the department Accounting and director of the research group Accounting at Groningen University.
prof.dr. H. (Henk) Vording	Henk Vording is Professor Tax Law at Leiden University and permanent visiting professor at Peking University School of Law.
J. (Judith) Kikkert BSc	Student of the MSc Management, Economics & Consumer studies at Wageningen University & Research

The assessment committee was supported by drs. T. (Titia) Busing, external NVAO-certified secretary.

All committee members and the secretary have signed a declaration of independence. The assessment committee has been submitted to, and validated by, NVAO prior to the site visit.

Attachment 2 Programme of the assessment

Thursday 3 November

09.00 – 09.15	Welcome to the panel by the Dean
09.15 – 10.15	Dean, Vice-Dean Education, Programme Director, Programme Manager Econometrics, Programme Manager education innovation
10.15 – 10.30	Break
10.30 – 11.30	Lecturers bachelor and master Economics
11.30 – 11.45	Break
11.45 – 12.45	Students/Alumni bachelor and master Economics
12.45 – 13.30	Lunch break
13.30 – 14.30	Lecturers bachelor and master Econometrics
14.30 – 14.45	Break
14.45 – 15.45	Students/alumni bachelor and master Econometrics
15.45 – 16.00	Break
16.00 – 17.00	Examination Board (all programmes)
17.00 – 17.30	Private discussion of the panel
17.30 – 18.00	Closure of the day with Vice-dean, Programme Director, Policy Officer

Friday 4 November

09.00 – 10.00	Lecturers bachelor and master Fiscale Economie
10.00 – 10.15	Break
10.15 – 11.15	Students/Alumni bachelor and master Fiscale Economie
11.15 – 11.30	Break
11.30 – 12.30	Lecturers MSc Accounting, Auditing and Control
12.30 – 13.15	Lunch break
13.15 – 14.15	Students/alumni MSc Accounting, Auditing and Control
14.15 – 16.00	Break and drafting preliminary findings and preparing oral panel report
16.00 – 16.30	Feedback of the panel and closure by the Dean
16.30 – 18.00	Drinks in Paviljoen

Attachment 3 Documents

- Self-evaluation report
- Teaching and Examination Regulations Master programmes ESE 2022-2023
- Rules and Regulations of the Examination Board 2022-2023
- Subject-specific reference framework Economics 2016
- Studentchapter Master Econometrics and Management Science
- ILOs and Dublin Descriptors - Master Econometrics and Management Science
- Relation ILOs and courses Master Econometrics and Management Science
- Overview Teaching Staff BSc and MSc Econometrics and Management Science
- 2022-05 ESE Organisation Charts 2022
- Annual Report Examination Board ESE 2021
- Examination Policy ESE, 08-2022
- Examination Protocol ESE
- Assessment Specification Table, format 08.2022
- Assessment overviews Bachelor 2022-2023
- ESE Policy Proctoring - October 2021
- Flowchart proctoring - October 2021
- Service Level Agreement Education 2022-2023
- ESE Language Policy
- Annual Report 2021-2022 PC
- Thesis Supervision Manual 2021-2022
- Student Thesis Manual
- Theses of 15 students