SAINT LOUIS UNIVERSITY.

# Program-Level Assessment: Annual Report

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| Program Name (no acronyms):<br>MS in Applied Financial Economics | Department:  Economics |
| | College/School:  Chaifetz School of Business |
| Degree or Certificate Level:  MS | |
| | Assessment Contact:  Hailong Qian |
| Date (Month/Year):  August 18, 2023 | |

In what year was the data upon which this report is based collected?  AY 2022-23

In what year was the program's assessment plan most recently reviewed/updated?  AY 2021-2022

## 1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

All five SLO were assessed.

SLO #1 (Knowledge):  Advance knowledge of economic and financial theory.

SLO #2 (Analytics/quantitative skills):  Demonstrate analytical proficiency with the use of quantitative techniques employed in economic and financial forecasting.

SLO #3 (Applications/modeling and forecasting):  Research topics both theoretically and empirically to design and evaluate appropriate modeling strategies.

SLO #4 (Communication):  Clearly articulate research methodologies and empirical findings in both oral and written frameworks.

SLO #5 (Professional ethics):  Demonstrate professional conduct with respect to carrying out research and providing/receiving feedback from peer colleagues.

## 2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe and identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

SLO #1 (Knowledge):  Exam questions were assessed in ECON 6000 Microeconomic Theory (in-person, fall 2022), ECON 6050 Econometrics I (in-person, fall 2022), ECON 6060 Econometrics II (in-person, spring 2023) and ECON 6120 Applied Macroeconomics (online, summer 2023).

SLO #2 (Analytics/quantitative skills):  Exam questions were assessed in ECON 6000 (in-person, fall 2022), ECON 6050 (in-person, fall 2022), and ECON 6120 (online, summer 2023).

SLO #3 (Applications/modeling and forecasting):  ECON 6060 (in-person, spring 2023) and ECON 6120 (online, summer 2023).

SLO #4 (Oral and written communications):  Capstone presentations and research papers were assessed in ECON 6000 (in-person, fall 2022) and ECON 6850, (in-person, summer 2023).

SLO #5 (Professional ethics):  Students' capstone research process, research paper and peer-review activities were observed and assessed in ECON 6850, in-person, summer 2023.

| Madrid student artifacts are not applicable. |
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## 3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (do not just refer to the assessment plan).

We followed a three-step process.

Step 1: Each instructor first collected raw assessment data and then calculated the respective percentages for "Exceeds Expectations", "Meets Expectations" and "Needs Improvement".

Step 2: An individual instructor then identified those student learning outcomes that students performed lower than 75% for "Exceeds Expectations" or "Meets Expectations".

Step 3: in this step, instructors proposed concrete measures for further improving student learning outcomes, especially for those SLOs identified in Step 2.

For the current assessment cycle, Dr. Hailong Qian, Dr. Muhammad Islam and Dr. Fei Tan were involved.

## 4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

The main findings from AY 2022-23 assessment data are:

(1) Overall, our MS-AFE students learned advanced quantitative techniques from the twelve-month long program of study; on average, close to 80% of the students (that is, 8 out of 9 students in the last cohort) achieved "Exceeds Expectations" or "Meets Expectations" for learning outcomes 1-3.

(2) Almost a quarter of the students needed further improvement in writing of their capstone research papers, while many international students needed further improvement in their oral presentation skills and confidence. Many students had trouble with writing a well-organized research paper that includes all the necessary components such as introduction, literature review, empirical analyses, and conclusion.

(3) Almost 20% of the students (1 out of 5 students) need improvement in SLO #5 (Professional Ethics) in terms clearly citing references and attributing models and results of others in their capstone research papers.

(4) More than 20% of students (2 out of 9 students) had trouble in applying theoretical econometric modeling and estimation techniques to real applications.

## 5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

The main findings from 2022-23 assessment data are as follows.
   (1) Our students gained strong econometric skills in modeling, estimation and forecasting.
   (2) Since some of our graduate students did not have finance or economics background, almost 30% (2 out of seven) of the students in ECON 6000 in fall 2022 did not have sufficient foundational knowledge in microeconomic theory.
(3) Many of our students (about 30%) need more practice in writing a research paper that seamlessly integrates all the necessary components of a professional research paper: introduction, literature review, data sources, model specification, empirical analyses, hypotheses tested, and conclusion based on empirical findings of the research, plus the reference sections.
(4) A significant percentage of our students (about one third, especially international students) are not confident in their oral presentation skills, which results in ineffective presentations.

(5) Many of our students (about a third) are very casual in citing references or clearly indicating results from other sources.
(6) A significant percentage of our students (about 20%) needs further improvements in application skills in terms of articulating the research question, finding the necessary data and searching for the best model specification.

**6. Closing the Loop: Dissemination and Use of <u>Current</u> Assessment Findings**

**A.** When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

The economics department faculty members who teach in the MS-AFE program (Dr. Muhammad Islam, Dr. Fei Tan, and Dr. Hailong Qian) met twice in Academic Year 2022-2023 (spring 2023 and summer 2023) to analyze and discuss the assessment data and how to further improve our students core skill set and the value-proposition of the program. We agreed to: (1) emphasize writing and oral communication throughout the program of study; and (2) emphasize student learning of programming skills such as R and Python.

**B.** How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

| Changes to the Curriculum or Pedagogies | • Course content<br>• Teaching techniques<br>• Improvements in technology<br>• Prerequisites | • Course sequence<br>• New courses<br>• Deletion of courses<br>• Changes in frequency or scheduling of course offerings |
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| Changes to the Assessment Plan | • Student learning outcomes<br>• Artifacts of student learning<br>• Evaluation process | • Evaluation tools (e.g., rubrics)<br>• Data collection methods<br>• Frequency of data collection |

Please describe the actions you are taking as a result of these findings.

Based on the current round of assessment data, we are planning to do the following.

(1) To maintain and further strengthen the quantitative skills of the MS-AFE program, the economics department is planning to offer a second track in applied quantitative economics.

(2) To further enhance our MS-AFE graduate students' analytical and statistical programming skills, the department is planning to offer two new classes: Applied Macroeconomics, and Applied Bayesian Methods in Time-series analysis using Python.

(3) To improve students' writing skills, the program is planning to require more writing assessment throughout the curricula. For example, ECON 6050 and ECON 6060 now also require students to write a short research paper on an economic/financial topics, while ECON 6060 and ECON 6850 (Capstone Research) is planning to require students to turn in and present multiple drafts of their papers.

(4) To improve students' communications skills, especially for many of the international students, the MS-AFE program is planning to offer students more presentation opportunities throughout the program. For examples, ECON 6060 now requires student presentations, while ECON 6850 will ask each student to present three times in the class: presentations of proposal, first draft and second draft, respectively. Additionally, ECON 6850 also requires a peer-reviewer to present three separate times: reviews of proposal, first draft and second draft, respectively. Additionally, in collaboration with our school Career Resources Center and the Business School Graduate Office, we are planning to have more social events so that our international students will have more in-person opportunities to interact with faculty and domestic students.

(5) To further improve our students' analytical skills and enhance the value of MS-AFE degree, we will start in fall 2023 offering Certificate in Applied Economic Forecasting, which consists of three courses: Economerrics I (ECON 6050), Econometrics II (ECON 6060), and Applied Bayesian Methods (ECON 6120).

> If no changes are being made, please explain why.

The main change the program is making is to gradually transition from EViews (a commercial statistical software) to open source programming software R and Python. To further enhance our students' applied knowledge and major practices, we added a new class, Applied Macroeconomics (ECON 6120), starting in summer 2023. And to further improve our students' applied quantitative skills, we also offered a new econometrics class, Applied Bayesian Methods (ECON 6100), starting in spring 2023.

7. **Closing the Loop: Review of <u>Previous</u> Assessment Findings and Changes**
    A. What is at least one change your program has implemented in recent years as a result of assessment data?

Based on the last assessment outcome in AY 2020-21, we made the following four improvements to the program.
    (1) Added Applied Bayesian Methods (ECON 6100);
    (2) Adopted Certificate in Applied Economic Forecasting;
    (3) Emphasized both oral and writing communication skills throughout the program of studies; and
    (4) Required students to be proficient in Python programming in ECON 6100.

    B. How has this change/have these changes been assessed?

The changes made in the last two years were mainly assessed in ECON 6100 (Applied Bayesian Methods) and ECON 6850 (Applied Financial Economics Capstone) by class projects, presentations and research papers. The main rubrics of assessment are five student learning outcomes.

    C. What were the findings of the assessment?

Since we offered the new elective ECON 6100 in AY 2022-23, most of the students elected to take the class in spring 2023. As a result, our students' analytical and Python programming skills have been significantly improved. As for the result of the enhanced writing and oral presentation requirements throughout the program of study, the improvement has been quite evident when students work on their capstone research in the last semester of their study in the program.

    D. How do you plan to (continue to) use this information moving forward?

Well, based on the last two rounds of assessment data, it is very clear that our students gained high level of quantitative skills in terms of modeling and forecasting, while their writing, oral communication and programming skills need further improvement. Thus, we are planning to:
(1) To maintain the quantitative strength of our program, we'll continue to require students to take three econometrics classes (ECON 6050, ECON 6060 and ECON 6100).
(2) To improve students' statistical programming skills, we'll offer more classes using R and Python programming languages; in fact, both econometrics classes (ECON 6050 and ECON 6060) now use R and EViews simultaneously, while the Bayesian class (ECON 6100) requires students using Python programming language.
(3) We'll continue to emphasize writing and oral presentation skills throughout the program.
(4) We'll continue to emphasize applied knowledge and current industrial practices throughout the program.

**IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.**