PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Erhan Bayraktar, assistant professor of mathematics, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of mathematics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2004	Princeton University
M.A.	2002	Princeton University
B.S.	2000	Middle East Technical University

Professional Record:

2006 – present	Assistant Professor, Department of Mathematics, University of Michigan
2004 – 2006	T. H. Hildebrandt Research Assistant Professor of Mathematics, University of Michigan

Summary of Evaluations:

Teaching — Professor Bayraktar plays an essential role in the department's teaching mission. There is high student demand for classes in financial mathematics and he is one of the few faculty qualified to teach it. As a result, his classroom teaching has been concentrated in the financial mathematics program and in service courses for the financial engineering program, which are aimed at graduate students. He takes his teaching seriously and his performance has shown dramatic improvement. Outside of the classroom, he has served as mentor of three postdoctoral scholars, and is currently advising four doctoral candidates.

Research — Professor Bayraktar has been extremely productive, publishing more than forty papers in refereed journals plus several more in conference proceedings. The papers contain difficult mathematics with real applications in finance. They cover a broad range of topics in finance and make use of many sophisticated mathematical methods. He has been successful at obtaining research funding, in particular from the National Science Foundation. He has received numerous invitations to present his work at conferences and is generally regarded as one of the top financial mathematics researchers of his generation.

Recent and Significant Publications:
"A proof of the smoothness of the finite time horizon American put option for jump diffusions,"
    SIAM Journal on Control and Optimization, 48(2), 2009, pp. 551–572.
"Multi-scale time-changed birth processes for pricing multi-name credit derivatives," with B.
    Yang, *Applied Mathematical Finance,* 16(5), 2009, pp. 429–449.
"Minimizing the probability of lifetime ruin under random consumption," with K. Moore and V.
    R. Young, *North American Actuarial Journal,* 12(4), 2008, pp. 384–400.
"Optimal time to change premiums," with H. V. Poor, *Mathematical Methods of Operations Research,* 68(1), 2008, pp. 125–158.

Service — Professor Bayraktar has served on the department's External Liaison Committee and on the Admissions and Fellowships Committee of the graduate program in applied and interdisciplinary mathematics. He has also served on a National Science Foundation review panel and has reviewed grant applications for several agencies, including the National Science Foundation and National Security Agency in addition to the Canadian National Science and Engineering Research Council. He has organized several sessions at conferences and has refereed papers for numerous journals.

External Reviews:
Reviewer (A)
"…[Bayraktar's] papers on optimal stopping all deal with hard technical problems with relevance to finance. … In this area…[he] must be considered as an expert of very high international standing. … Considering the fact that Bayraktar has published 40 papers since his PhD in 2004, I find that he has been extremely productive. Most of the publications are in high quality journals, and…[I have] confirmed…that he is also producing high quality mathematics. …he clearly belongs to the absolute top in his [generation]."

Reviewer (B)
"…Bayraktar has made a considerable impact in applied probability and its applications to finance. He already has a significant international reputation as evidenced by his continuous research funding and many invitations to important conferences. … His collaborators are among the most prominent researchers in the field… He is almost unique in his age group, certainly in the top two or three worldwide…"

Reviewer (C)
"…Dr. Bayraktar is one of the few mathematicians [of his generation] worldwide who are influential in the area of financial mathematics. His publication record is outstanding both in quantity and in quality."

Reviewer (D)
"There is no doubt that you have in your ranks a major talent [of his generation] in the field of Stochastic Analysis and its applications. He possesses impressive knowledge, lightning learning, strong motivation, great analytical power and insight. He has been collaborating widely, tackling difficult problems on his own – as well as with graduate students, peers, and post-docs, whom he inspires. The *breadth* of topics in [his] list of publications, *and the depth* of the results he has managed to obtain, are just phenomenal…"

Reviewer (E)
"Erhan is certainly a rising star. …he is undoubtedly among the best known academics in the area of financial engineering/mathematical finance in his generation. His publication record is exceptional. …his professional maturity is way beyond a junior faculty member."

Reviewer (F)
"…I consider Prof. Bayraktar to be an exceptionally well-qualified candidate for such promotion. …Over a relatively short period of time, Erhan has become a prominent applied mathematician… In addition to the contributions reflected in his scholarly publications, Prof.

Bayraktar has been in demand as an invited speaker at leading conferences... ...he clearly has the instincts and ethos it takes to be a successful educator in a deep scholarly discipline."

Reviewer (G)
"...I consider him to be a first rate Applied Mathematician. His productivity is of course amazing... ...one might think that the papers are a sequence of simple, trivial observations. In my opinion, they are not. In addition, his papers often appear in the two top journals for Financial Engineering."

Reviewer (H)
"Mathematical finance is a field on which many mathematics departments put significant weight, not the least reason being the high number of mathematics graduates who go on to careers in the financial industry. Dr. Bayraktar studies topics across the spectrum of work in this field... Indeed, the breadth of his work is remarkable – I can think of few researchers [of his generation] in this field with such a diverse range of contributions. ...Bayraktar has accumulated an interesting, important, and varied body of work, that speaks well to the likelihood of his growing into one of the subject's leaders."

Summary of Recommendation:
Professor Bayraktar is an international leader in financial mathematics. He makes a vital contribution to the teaching in the Department of Mathematics and in financial engineering. His service contribution is appropriate for a tenure-track faculty member. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Erhan Bayraktar be promoted to the rank of associate professor of mathematics, with tenure, in the College of Literature, Science, and the Arts.

Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History and Dean
College of Literature, Science, and the Arts

May 2010