

# THE ISBA BULLETIN



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The official bulletin of the International Society for Bayesian Analysis

## A MESSAGE FROM THE PRESIDENT

- Merlise Clyde -  
*ISBA President, 2013*  
[clyde@stat.duke.edu](mailto:clyde@stat.duke.edu)

Here in the northern hemisphere, summer signals the arrival of the conference circuit and looking at the ISBA calendar of events and posts in the conference forum, there are lots of opportunities to learn about what is going on in the Bayesian world! ISBA section meetings, regional meetings or other focused meetings predominate the calendar this year, as we are between ISBA World Meetings. (Once upon a time we had annual world meetings, a topic to perhaps revisit given our current growth.) While small “themed” meetings are extremely valuable and productive (I have spent most of the last three weeks in invigorating discussions with astronomers and statisticians involved in the SAMSI Workshop on Modern Statistical and Computational Methods for Analysis of Kepler Data) it is often financially and physically (given times and/or distance) impossible to attend all of the meetings I am interested in taking place around the world. Video technology can help us bring contents of talks to everyone who cannot attend and we should start to see more usage, but the discussions and exchanges between sessions, at meals, or over a beer at the poster sessions are difficult to replicate, even with Google Hangouts! World meetings continue to play an important role in bringing the community together and allow members and non-members to attend tutorials and sessions crossing a range of sub-fields in Bayesian statistics. The Program Committee and Organizing Committee are busy gearing up for ISBA 2014 (hashtag [#ISBA2014](#)) in Cancun next July, so stay tuned for

announcements about what promises to top Kyoto! And while it seems that we just finished one world meeting, and are in the midst of planning for 2014, it is already time to start planning the location of ISBA 2016! We encourage anyone who is interested in hosting an ISBA World Meeting to form a local planning committee and to submit a pre-proposal by December 1 (see the [World Meeting Planning website](#) for more details and the form for submitting pre-proposals). If you have questions feel free to contact me or members of the Program Council. Who knows, if there is enough interest perhaps we could have an ISBA 2017 selected next year!

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The increase in the number of meetings (a positive measure of Bayes' success!), however, creates continual pressure on ISBA finances to support junior researchers to participate in meetings. During this year, we will be looking into several directions to secure ISBA's finances to support ongoing initiatives. To provide a more stable membership base and income stream, last year the Board created a new class of Institutional Memberships (IM) for organizations. Standard and Premium IM provide an efficient way for organizations to provide ISBA memberships for several members with one transaction and in particular are a great way for academic organizations to sponsor memberships for students or junior researchers (join now before classes start up again!). These IM include a fixed number of free advertisements on the ISBA website and in the ISBA Bulletin, and provide additional discounts for ISBA events. IM for Organizational Partners is intended for organizations, such as publishers, who are interested in advertising on the ISBA website and in the Bulletin, and provides discounts on vendor booths at ISBA events. All Institutional Members will be listed on the ISBA Partners webpage with a link to the organization's website. If you are part of an organization with five or more members, we encourage you to consider an Institutional Membership today! More details are available under the [IM page under Membership](#) or contact us at [members-info@bayesian.org](mailto:members-info@bayesian.org) with any questions.

Another objective for member retention is to elucidate and expand the benefits of being a member of ISBA. Members and non-members alike have access to [Bayesian Analysis](#), can download the [ISBA Bulletin](#) from the website, and subscribe to the ISBA [Jobs](#) and [Conference](#) forums, and may be nominated for prizes such as the DeGroot Prize, Lindley Prize, Mitchell Prize or Savage Award. The Board has created two member only awards,

[ISBA Fellows](#) (deadline extended until July 31!) and the [Zellner Medal](#) (see announcement and details later in the Bulletin) to recognize the achievements and contributions of ISBA members. Both of these require an active membership for at least three years, so if you have an expired membership, you have until the end of July to renew without your membership being suspended and losing any accrued time.

Currently, the most visible membership benefit is reduced registration for ISBA World meetings, and now section meetings. A major goal for this year is to increase our portfolio of activities by launching a series of webinars, with discounted registration for members of ISBA and SBSS (a reciprocal arrangement we established last year) to support existing and new initiatives, such as the New Latin American Summer School. Many thanks to Cate Calder who organized our first webinar given by Mark Berliner last year (now available in the [ISBA Video Gallery](#)). Last April, Havard Rue and Daniel Simpson offered a webinar on INLA, Integrated Nested Laplace Approximations, as part of a Short Course that was given at Duke University at the same time. This was free for all ISBA members, as we tested out the use of WebEx to deliver webinars! In case you missed it, you may still access the [video of the webinar](#). Webinars are a cost effective way to provide tutorials and short courses to members and non-members alike around the globe without having to go through airport security or deal with lost luggage. If you have suggestions for topics from the basics to advanced, would be interested in presenting a webinar (we are looking for presentations in Spanish and other languages), or would be able to help out with hosting a presentation, please contact me or members of the [Continuing Education Committee](#).

My next conference will be the Joint Statistics meeting in Montreal, where we will announce this year's Savage Award and Mitchell Prize! See you there! ▲

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**A MESSAGE FROM THE EDITOR**

- Feng Liang -  
[liangf@illinois.edu](mailto:liangf@illinois.edu)

Dear readers, I hope you have been enjoying the summer so far. To some of us, summer may be the most relaxing but also the busiest time of the year: traveling between conferences/workshops, finishing up papers and research projects which we put off during the school year, having a fun

and relaxing vacation with our loved ones, etc. In this issue, you will find most of the usual Bulletin sections that provide information and reports on many activities in our society around the world, including the new Institutional Membership offered by ISBA for academic departments and companies, call for Zellner medal, nominations for new ISBA fellows, and updates from various ISBA sections.

In addition, in Software Highlight Section, our Associate Editor Francisco Torres presents an article by Silvia and her co-authors on an R package for profile regression mixture models using Dirichlet processes. This would be the last article handled by Francisco, who is finishing his term as the Associate Editor. I want to take this opportunity to thank Francisco for his great work! Before we find a new AE, please contact me directly if you are interested in making contributes to this Section. Also in this issue, in the Students' Corner Section, our Associate Co-Editors Isadora Anto-

niano and Antonio Ortiz continue the new format, "Student Voices", for their section, which aims to encourage students or those who were students not so long ago to express their points of view. This time, the *speaker* is Dr. Juan Carlos, who just completed his doctoral studies in Statistics at the University of Kent, and is currently a Researcher in Statistics and Economics at the Central Bank of Mexico. Juan, thanks for sharing your thoughts and experience with us! I hope more people, especially the recent graduates, can send us their "Voices".

As always, you are welcome to participate in the Bulletin by emailing suggestions/contributions to me or to any member of the Editorial Board. We are still trying to find AEs for the following Sections, *Software Highlight*, *Interviews*, *Annotated Bibliography*, *Applications*, and *Bayesian History*. Please do not hesitate to contact me if you are interested in being an AE or want to suggest names. ▲

## FROM THE EXECUTIVE COMMITTEE

### INSTITUTIONAL MEMBERSHIPS

- Merlise Clyde -  
*ISBA President*  
[clyde@stat.duke.edu](mailto:clyde@stat.duke.edu)

Join now to be prepared for ISBA elections and the start of academic year! ISBA offers several levels of **Institutional Memberships** (IM) that depend on the size of the organization, type and location. Each IM provides discount codes for free memberships in ISBA with full ISBA membership

benefits, which is a great way to sponsor student memberships or other memberships with just one transaction. IM member benefits include additional discount codes for meetings and continuing education for individuals in the organization. IM may also place a limited number of free ads in the ISBA Bulletin and on the ISBA website (in addition to the free announcements in the Jobs Forum). Reduced rates (50% off) are available for organizations in **countries** with per capita income below \$6000. ▲

## CALL FOR ZELLNER MEDAL

Nominations are now being accepted for the Zellner Medal, which honors Arnold Zellner, one of the founders of ISBA and ISBA's first president. The purpose of the Zellner Medal is to recognize ISBA members who have rendered exceptional and distinguished service to ISBA over an extended period of time, and whose contributions have

had an impact on the society beyond the time of his or her incumbency.

The Zellner Medal will be given every even year to, at most, two recipients, selected by a Committee consisting of three former ISBA Presidents, not serving ISBA as current officers. The Zellner

Medal is restricted to current ISBA members; candidates should have been members of ISBA for the last three consecutive years, at least, and served ISBA in a range of leadership roles over an extended period of time. Nominations may be made by any ISBA member, and should include letters of endorsement from five ISBA members, other than the nominee. Individuals may provide let-

ters of endorsement for at most two nominations in a given year. Nominations may be submitted through the ISBA website using the online form and should be submitted by August 31, 2013.

The recipient(s) of the Zellner Medal will be announced at the next ISBA World Meeting in Cancun. ▲

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## CALL FOR ISBA FELLOW NOMINATIONS

To recognize ISBA members who have made outstanding contributions in some aspect of statistical work (publication, teaching, and service, including service to the society), an eight person committee of past Fellows will elect new ISBA Fellows on a bi-annual basis.

Any ISBA member, who has been a current member for at least three years, is eligible for nomination. Nominators should arrange to have three letters of support and a recent cv (in pdf for-

mat) to submit as part of the nomination package. Nominations should be submitted electronically using the ISBA Fellows Nomination Form at <http://bayesian.org/node/add/isba-fellow> by July 31, 2013. Elected Fellows will be announced at the next World Meeting in 2014 in Cancun, Mexico.

To avoid problems of Conflict of Interest, members of the ISBA Fellows Committee should not be asked to provide letters of support. ▲

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## BAYESIAN ANALYSIS - A MESSAGE FROM THE EDITOR

### UPDATE FROM BA

- Marina Vannucci -  
*Editor-in-Chief*  
[marina@rice.edu](mailto:marina@rice.edu)

The 2013 June issue of BA features a special invited paper by Peter Mueller and Riten Mitra on "Bayesian Nonparametric Inference - Why and How"(with discussion), sponsored by the Bayesian Nonparametric Section of ISBA. The paper reviews inference under models with nonparametric Bayesian priors. The presentation follows a set of examples for some common inference problems that are challenging for standard parametric inference. These include density estimation, clustering, regression and mixed effects models with random effects distributions. The paper is accompanied by 3 invited discussions, by Carlin and Murray, by Hoff and by O'Hagan, and by 13 contributed discussions, providing additional

perspective on the topic, followed by a rejoinder from the authors. The issue also contains other fine articles on various topics of Bayesian statistics.

Following up on the successful experience with the June discussion paper by Mueller and Mitra, at BA we have now decided to expand on our policy regarding discussion papers. In addition to the regular type of discussion papers, typically chosen by the EiC, or suggested by an Editor, among the regular submissions, it will now be possible for individual authors to submit manuscripts for consideration as discussion papers. Such submissions will first go through our regular review process and, if accepted, the Editor in charge and the EiC will make a decision as to whether the manuscript can make a good discussion paper. If so, invited and contributed discussions will be solicited by the EiC. If you wish to submit your work for consideration, please select 'Article with Discussion'

when submitting at the EJMS site. Additionally, proposals for invited discussion papers can be put forward by an ISBA section directly to the EiC.

Finally, just a reminder that we will have an invited BA session at ISBA 2014, which will fea-

ture a paper, with discussion, to be chosen by the EiC in late November 2013, among those accepted for publication (and not yet published). The paper will be discussed at ISBA 2014 and published after the conference, in the Sept 2014 issue of BA, with discussions and rejoinder. ▲

## ISBA - SECTIONS

### ECONOMICS, FINANCE & BUSINESS SECTION

- Mike West -

Chair

[mw@stat.duke.edu](mailto:mw@stat.duke.edu)

#### A. EFaB Member News

In this issue of the Bulletin, we kick-off a section with “News” about EFaB members. In future Bulletins, we would like to expand this new section, in part to reflect and publicize the diversity of professional activities of EFaB members. Be encouraged to email the Section chair– or any other member of the EFaB executive committee– with future items that you think may be of interest to other EFaB and ISBA members.

- Fernando Bonassi has moved to a research position as Statistician in Quantitative Marketing at Google, Mountain View CA.
- Merlise Clyde, EFaB lifetime member and current ISBA President, has been appointed as Chair of the Department of Statistical Science at Duke University, effective July 1st 2013.
- German Molina, formerly in Quantitative Trading with Tudor Capital, UK, is a co-founder of a new investment management company, Idalion Capital, which expects to be open-for-business by mid-2013. Idalion Capital is opening offices in the UK and USA, and German will move to Florida to head the US office, operations and quantitative trading.
- Jouchi Nakajima has moved to a research position as Economist at the Bank of Japan in Tokyo, and is involved in extending his

research in dynamic models and forecasting in macroeconomics to bank policy studies and economic decision analysis.

- Jesse Windle, currently completing his PhD at the University of Texas at Austin, has accepted a position as postdoctoral associate in statistical science at Duke University, beginning in summer 2013.
- The ISBA Board of Directors named *five* EFaB members in the group of (20) ISBA members recently honoured as inaugural ISBA Fellows. More details are available at [the ISBA Fellows web page](#). The five EFaB members are Siddhartha Chib, Enrique de Alba, Herman van Dijk, Hajime Wago, and Mike West.

#### B. Reports on Recent Meetings & Events

- The first EFaB endorsed short-course, on *Bayesian Dynamic Models: Time Series Analysis & Forecasting*, held on April 26th, 2013 at the University of Connecticut, attracted over 30 students, researchers and practitioners. Presented by EFaB Section Chair Mike West, this one-day course included a range of models, methods, software and examples from business and financial areas, among other topics. This event was the first EFaB endorsed or sponsored short-course, and some of the participants received a discount on the registration fee through EFaB membership. Thanks are due to the organizers at the University of Connecticut, particularly Ming-Hui Chen who organized this course along with two others as part of the 2-day *New England Statistical Symposium*.
- The EFaB endorsed *1st Vienna Workshop on High Dimensional Time Series in Macroeconomics*

*nomics and Finance*, held on May 2nd-4th, 2013 at the Institute for Advanced Studies in Vienna, Austria, was a vibrant meeting with presentations and discussions on multiple areas of interest to EFaB members. The agenda included significant representation of Bayesian methods, particularly but not exclusively in dynamic factor models for macroeconomics and other areas. Copies of slides and posters presented at the workshop are available from the web site. This workshop kicks-off what is expected to be a biennial series of meetings of a similar format and focus, and EFaB members should make a note of the likely *2nd Vienna Workshop* to be announced for 2015. EFaB will maintain contact with the organizers, led by Manfred Deistler of the Vienna University of Technology and Institute for Advanced Studies, as plans develop.

### C. Some Forthcoming Meetings & Events

EFaB endorses or sponsors workshops and conferences concerned substantially with Bayesian ideas, methods and applications in the “E”, “F” and “B” areas. Members are encouraged to come forward with ideas and proposals for endorsement and/or sponsorship of meetings. Endorsement agreements will often involve reduced registration fees for ISBA/EFaB members.

Below we note some upcoming meetings— updating information on some noted in the previous issue of the Bulletin, while adding news of additional meetings of likely interest to EFaB members.

- **RCEA-BEW7**, the *7th Annual Bayesian Econometric Workshop* of the *Rimini Centre for Economic Analysis*, is officially endorsed by EFaB. This is the latest in a series of focused Bayesian workshops run by the Italian economic research centre RCEA. **RCEA-BEW7**, in Rimini, Italy, on June 25th-26th, 2013, will focus on a range of topics in Bayesian econometrics, and several EFaB members are involved in organisation and as invited speakers at the meeting. RCEA-BEW7 will be immediately followed by the 2nd Rimini Time Series Workshop that may also be of interest to EFaB and other ISBA members.
- A short-course of potential interest to EFaB members will be presented at **First LA-Bayes**, the *1st ISBA Latin American School*

*In Bayesian Statistics*, to be held in Costa Rica on July 22nd-27th, 2013. Raquel Prado, professor of statistics and applied mathematics at UCSC, will present a short-course on *Bayesian Analysis of Time Series* at this ISBA meeting.

- **ESOB 2013**, the 2013 meeting of the *European Seminar on Bayesian Econometrics (ESOB)*, is officially endorsed by EFaB. **ESOB 2013**, at the Norges Bank in Oslo, Norway, on August 22nd-23rd, 2013, will focus on novel and recent research in a wide range of topics in the field of Bayesian econometrics.

EFaB members participating in ESOB 2013 will receive a substantial (30%) discount on the registration fee (the standard registration is 2000NOK, the reduced fee for EFaB members is 1400NOK). Please visit the ESOB 2013 web site linked above for more details.

Details of future ESOB meetings, including next year’s meeting in Paris, in November 2014, will be posted at the ESOB web site and noted in future EFaB letters to the Bulletin.

### D. George Box Memorial Events

As many will know, George Box passed away in spring this year. The *memorial web page* set-up by the Statistics Department at the University of Wisconsin provides links to a number of obituary and media sites, as well as to aspects of Box’s professional life and contributions to statistics broadly.

A number of memorial events are expected. These include the following that may be of particular interest to EFaB members, the second listed being co-organized by EFaB.

#### **JSM 2013 session in August 2013:**

A special remembrance session, *A Tribute to George Box*, will be held at the Joint Statistical Meetings in Montreal, on August 4th 2013. EFaB members attending the JSM may be interested in attending. Among the presentations in the session are two of particular relevance to EFaB members: George Tiao will speak on Box’s contributions to Bayesian statistics, and Greta Ljung will discuss his contributions to time series and forecasting.

#### **ISBA meeting in May 2014:**

In view of the seminal and broad-ranging contributions George Box made to Bayesian methods

generally, and to applications in industry, time series and forecasting, and related areas of section interest in particular, EFaB is partnering with the ISBA Section on Industrial Statistics and the ISBA Program Council to plan an ISBA meeting marking Box's his work and impact, and relating it to currently active areas of Bayesian research and applications. Initial planning activities are underway in consultation with several of Box's past students and collaborators. Refik Soyer, chair of the ISBA Section on Industrial Statistics, is leading the initiative and planning, and EFaB will be working with Refik and his section to develop the agenda and details.

The ISBA meeting is tentatively scheduled for May 21st-22nd, 2014, and will be held at the George Washington University in Washington DC. More details will be forthcoming shortly.

#### E. The 1st EFaB Workshop: EFaB@Bayes 250

We are now well-advanced in planning the *1st EFaB Workshop: EFaB@Bayes250*, as part of the ISBA sponsored *Bayes 250 Conference* at Duke University, Durham, NC, on December 15th-19th, 2013. The conference will mark and celebrate the 250th anniversary of the formal reading of Bayes' seminal paper to the Royal Society. This will be a unique event with exceptional scientific and educational activities, and the registration costs have been substantially subsidized to enable and support participation of all EFaB members.

*EFaB@Bayes250* will be held on December 15th-17th, 2013 inclusive: there will be 2 full days of EFaB tutorials, scientific sessions, a special session of talks by new researchers, poster session and reception, and then the 3rd day is *Bayes 250 Day*.

This inaugural EFaB meeting will promote (i) exploration of research interconnections in Bayesian ideas and methods across a broad sweep of economic, finance and business areas, and (ii) interactions between researchers from academia and non-academic institutions, groups and companies. Overlaying these core research and professional goals, the meeting will be of particular interest to senior graduate students and new researchers from statistics, applied mathematics, economics and business areas, and other fields. Coupling introductory tutorials in selected areas with research presentations and poster sessions, and with multiple informal, interactive discussion opportunities that intersect with the participants in both the Objective Bayes and Bayes 250 Day

meetings, this will be a particularly exciting and active meeting for new and junior researchers.

#### Schedule:

*December 15th:* EFaB tutorials:

- *Sequential Monte Carlo*, by Hedibert Lopes, University of Chicago
- *Computational Advertisement*, by Deepak Agarwal, LinkedIn

*December 15th-16th:* EFaB scientific sessions:

- Session on Bayesian Econometrics
- Session on Bayesian Models in Finance
- Session on Bayesian Models in Business
- Session on Applications in Econometrics and Finance
- New Researcher Session

*December 16th:*

- EFaB Poster Session
- Bayes 250 Reception

*December 17th:* Bayes 250 Day.

- Talks marking the anniversary by: Stephen Fienberg, Michael Jordan, Christopher Sims, Adrian Smith, and Stephen Stigler
- Banquet

Please visit the *EFaB@Bayes250* web site for full details, including:

- Call for *New Researcher Session* presentations,
- Call for *Poster Session* submissions,
- Information on EFaB student and new researcher awards to be made at the event, and
- Information and links to registration.

#### Sponsors & Awards:

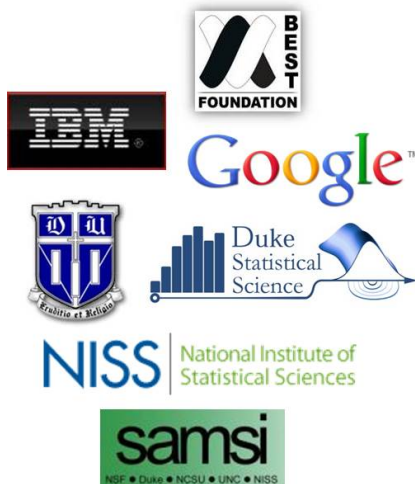
As noted at the *EFaB@Bayes250* web site, the workshop will be partly financially supported— as one of the three components of the overall Bayes 250 Conference— by Duke University through the offices of the Deans of Arts & Sciences, the Natural Sciences, and the Graduate School, through the office of the Vice Provost for Research, by the Department of Electrical and Computer Engineering, and by the Department of Statistical Science.

We also particularly note the generous support of the following organizations:

- *The BEST Foundation*, providing financial support for the participation of students and junior researchers at *EFaB@Bayes250*, and

also separately establishing and funding the BEST-EFaB Research Award for junior researchers. The award of \$1,000 will be made based on posters and/or oral presentations of new researchers and students at EFaB@Bayes250.

- **IBM Research**, establishing and funding the IBM Student Research Award for students presenting at EFaB@Bayes250. The award of \$1,000 will be made based on posters presented in the EFaB@Bayes250 poster session.
- **Google**, providing financial support for travel and participation awards for students and junior researchers at EFaB@Bayes250.



We hope and expect to be able to announce additional sponsoring organizations in coming months.

We also note that participants from an affiliate organization of **SAMSI** and **NISS** may be eligible for partial reimbursement of workshop expenses.

#### **Registration:**

The registration fee for EFaB@Bayes250 covers the full 3-days: the 2-days of workshop tutorials and research sessions and Bayes250 Day, with continental breakfasts, lunches and refreshment breaks each day, as well as the reception at the poster sessions, and the Bayes250 banquet. Until mid-fall 2013, the full registration fee of \$380 for EFaB@Bayes250 is discounted for EFaB members and students: Member discounted rate: \$320, Student rate: \$190

Please be encouraged to register early, and to pass along the information to colleagues and

others who may be interested in joining ISBA/EFaB and participating in this unique event. Please also note that the registration fees will be increased at a date-to-be-announced in fall 2013, so make sure to take the opportunity of these subsidized, discounted rates soon.

#### **Support for Students and New Researchers:**

In addition to the registration subsidies, and awards, already mentioned, we will be offering additional financial support– in the form of partial travel and subsistence awards– to students and new researchers participating and presenting at EFaB@Bayes250. In coming months, details will be announced and made available at the Workshop website and via email to EFaB members.

Members with student advisees or junior colleagues (less than 5 years since PhD) who may be interested in participating should pass this information along, and please encourage them to sign-up for EFaB membership in advance of registering for the meeting.

#### **F. Wolfgang Polasek**

The Bayesian community has, sadly, lost a senior colleague and central contributor to Bayesian methods– Wolfgang Polasek. Wolfgang passed away in late May 2013. Wolfgang worked in many areas of methodology, emphasising applications in Bayesian econometrics and other EFaB areas. An initial memorial notice is posted at the web page of the **Institute for Advanced Studies** in Vienna, where Wolfgang held his most recent appointment as senior researcher.

#### **G. 2013 EFaB Elections**

In the October/November ISBA elections this year, EFaB members will vote on nominees for two offices: the Section Chair-Elect for 2014, to become Chair in 2015, and the Section Treasurer for 2014-2015. If you are interested in being considered as a potential nominee, or are interested in suggesting other current EFaB members for consideration, please contact the 2013 EFaB Nominating Committee by email to the committee Chair, **Yasuhiro Omori**, in coming weeks. Once the committee has completed its work, the Section will submit the slate of nominees– two candidates from the EFaB membership for each of the two offices– to the ISBA Secretary by early August 2013.



## H. Member Involvement in EFaB

*Membership:* Please help to advertize EFaB and bring the Section to the attention of colleagues, students and others you think may be interested in joining. Later this year we expect to announce new, reduced membership fees for students and for all members from low-income countries, and hope current members will be active in promoting the Section. Also, be reminded that new members signing up for annual membership on or after September 1st will be full Section members for the balance of 2013 as well as throughout 2014.

*Invitation:* We invite and encourage all ISBA members to contact any of us to discuss ideas

for EFaB activities of any kind (consistent with the Section aims and bylaws), and especially related to short-courses, webinars– which ISBA is starting to more actively develop and promote– workshops and conferences. Activities linked to other groups, organisations and businesses are to be encouraged, as well as more traditional forms of educational outreach. Please visit the [Section web page at the ISBA site](#). If you are interested in discussing, participating, volunteering, (volunteering others), and/or have any other input, please do not hesitate to come forward, and feel free to contact any members of the EFaB executive committee to discuss. ▲

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## BAYESIAN NONPARAMETRICS SECTION

- Michele Guindani -  
Program Chair

[mguindani@mdanderson.org](mailto:mguindani@mdanderson.org)

The Bayesian Nonparametrics (BNP) Section of ISBA would like to advertise the following initiatives that are coming up:

- First and foremost, the 9th Conference on Bayesian Nonparametrics will be held on June 10-14, 2013, in Amsterdam, The Netherlands. The scientific and local organizing committees have put together an exciting program, with plenary talks by G. Roberts, D. Dunson, M. Jordan and J. Rousseau. Registration is now open. Regular registration closes on May 7. For more information, see the conference website at <http://www.bnp9.win.tue.nl/>.
- We are already accepting proposals for the organization of the 10th Conference on Bayesian Nonparametrics, to be tentatively held in June, 2015. Proposals need to be submitted by May 15th, 2013. To request a detailed form for the submission and for more information on the selection procedure,

please contact Michele Guindani, Program Chair of the BNP section of ISBA, at [michele.guindani@me.com](mailto:michele.guindani@me.com).

- The June issue of Bayesian Analysis will feature a captivating paper by Peter Mueller and Riten Mitra, titled “*Bayesian Nonparametric Inference - Why and How*”. The editor in chief of Bayesian Analysis has organized invited discussions by three masterminds of anything Bayes, as well as a set of contributed discussions by other many prominent authors.
- Last but not least, Judith Rousseau has organized a one-day satellite workshop to MCMCski, on “Bayesian nonparametrics, modelling and computations (BN-Pski)”. The workshop will be held in Chamonix on January 9th, 2014 and is free for any person registered at MCMCski. For more information, see the MCMCski website (<http://www.pages.drexel.edu/~mw125/mcmski>), or contact directly Judith at [rousseau@ceremade.dauphine.fr](mailto:rousseau@ceremade.dauphine.fr).

For any more information on BNP related events (or propose your own), stay tuned on our Section website at <http://bayesian.org/sections/BNP>. ▲

## OBJECTIVE BAYES SECTION

- Ed George and Luis Pericchi -  
*Chair and Chair-Elect*

[edgeorge@wharton.upenn.edu](mailto:edgeorge@wharton.upenn.edu)

[luis.pericchi@upr.edu](mailto:luis.pericchi@upr.edu)

The big wonderful meeting is on the horizon!!! OBayes 2013, the Tenth International Objective Bayes meeting will be held from December 15-19 2013 at Duke University in Durham, NC USA. As part of the Celebration of the 250th Anniversary of the original Bayes Paper and the first section meeting of EFaB, five days of magical Bayesian bliss are guaranteed for all. Registration is now open at <http://bayesian.org/sections/OB/obayes-2013-celebrating-250-years-bayes>. A meeting not to be missed, we hope to see you there!!!!

Now the official bi-annual meeting of the Objective Bayes Section of ISBA, OBayes 2013 will mark the latest in a series of amazing conferences held in West Lafayette, IN, USA, 1996; Valencia, Spain, 1998; Ixtapa, Mexico, 2000; Granada, Spain, 2002; Aussois, France, 2003; Branson, MO, USA, 2005; Roma, Italy, 2007; Philadelphia, PA, USA, 2009; and Shanghai, China, 2011, one of the longest running and preeminent series of meetings in Bayesian statistics.

The scientific component of OBayes 2013 will consist of 21 invited talks and discussions, as well as a poster session to which submissions are encouraged. Students can apply for support to attend the meeting at the ISBA website.

The activities at the meeting will include the following:

*Sunday, December 15:*

- Tutorials on objective Bayesian methodology, given by Susie Bayarri, James Berger, Jose Bernardo, Christian Robert and Dongchu Sun

*Monday, December 16:*

- Workshop Opening: “250 Years of OBayes” by Ed George
- Scientific sessions
- Evening poster session and Bayes250 reception & party

*Tuesday, December 17:*

- Bayes 250 Day, with lectures by Stephen Fienberg, Michael Jordan, Christopher Sims, Adrian Smith, and Stephen Stigler
- Bayes250 banquet in the evening (Sharon McGrayne speaking)

*Wednesday, December 18:*

- Scientific sessions
- ISBA Objective Bayes Section Meeting

*Thursday, December 19:*

- Scientific sessions.

Turning to the upcoming ISBA elections in October, the Objective Bayes Executive Committee is currently soliciting names of three section members to serve on the Section Nominating Committee. This committee will be tasked with selecting candidates for the October election for a new OB chair-elect and a new OB secretary with terms beginning in 2014. If you would like to volunteer, or would like to recommend a fellow member to serve on this important committee, please send your suggestions as soon as possible to Marilena Barbieri [marilena.barbieri@uniroma3.it](mailto:marilena.barbieri@uniroma3.it). ▲

## INDUSTRIAL STATISTICS SECTION

- Refik Soyer -  
*Section Chair*

[soyer@gwu.edu](mailto:soyer@gwu.edu)

Upcoming ISBA IS (Industrial Statistics) activities:

- An ISBA/IS session is organized at the ISBA South Africa Chapter meeting in Grahamstown during June 26-28, 2013.

- ISBA/IS sponsored session on “Advances in Bayesian Reliability Analysis” organized at the, Mathematical Methods in Reliability Conference at Stellenbosch, South Africa during July 1-4, 2013.

- The ISBA/IS executive committee is actively involved in organization of the Third Symposium on Games and Decisions in Reliability and Risk in Kinsale, County Cork, Ireland during July 8th - 10th, 2013. There will be an ISBA/IS sponsored section at the symposium.

sium.

- At the INFORMS 2013 annual conference in Minneapolis, October 6-9, 2013, ISBA-IS is organizing a session titled on “Bayesian Methods for Industrial Statistics”. The session is cosponsored by ISBA/IS and Quality, Sta-

tistics and Reliability (QSR) section of INFORMS.

- An ISBA/IS sponsored invited section is organized at the European Network Business and Industrial Statistics (ENBIS) meeting in Ankara, Turkey, September 15-19, 2013. ▲

## SOFTWARE HIGHLIGHT

### PREMIUM: AN R PACKAGE FOR PROFILE REGRESSION MIXTURE MODELS USING DIRICHLET PROCESSES

Silvia Liverani

[s.liverani@imperial.ac.uk](mailto:s.liverani@imperial.ac.uk)

David I. Hastie

[david.hastie@rsimony.com](mailto:david.hastie@rsimony.com)

Sylvia Richardson

[sylvia.richardson@mrc-bsu.cam.ac.uk](mailto:sylvia.richardson@mrc-bsu.cam.ac.uk)

Profile regression is an alternative to regression models for estimating joint effects of several, potentially correlated, covariates. In particular, profile regression non-parametrically links a response vector to covariate data through cluster membership (Molitor et al., 2010) and inference is based on clusters representing covariate patterns as opposed to individual risk factors.

We have implemented this method efficiently in C++ in the R package PRemiuM (Liverani et al., 2013).

#### Dirichlet Process Clustering of profiles

PRemiuM performs Bayesian clustering using a Dirichlet process mixture model where the data  $D_i$  is jointly modelled as the product of a response model and a covariate model, to give the following likelihood:

$$p(D_i|Z_i, \Theta, \Lambda) = f_Y(Y_i|\Theta_{Z_i}, \Lambda, W_i) f_X(X_i|\Theta_{Z_i}, \Lambda),$$

where  $Z_i$  are the cluster allocations,  $\Theta_{Z_i}$  are cluster specific parameters,  $\Lambda$  are global parameters and  $W_i$  are fixed effects that we wish to adjust for.

The covariate likelihood  $f_X$  can be specified as a discrete or Gaussian mixture, or a mixture of

the two. The likelihood  $f_Y$  has been implemented for Bernoulli, Binomial, Poisson, Normal and categorical response. For example, for a binary response model, we introduce the global parameter vector  $\Lambda = \beta$ , of the same length  $L$  as the fixed effects vector  $W_i$ , to capture the contribution of the fixed effects, that we wish to adjust for. Then,  $f_Y(Y_i|\Theta_{Z_i}, \Lambda, W_i) = p(Y_i = 1|\theta_{Z_i}, \beta, W_i)$  is given by

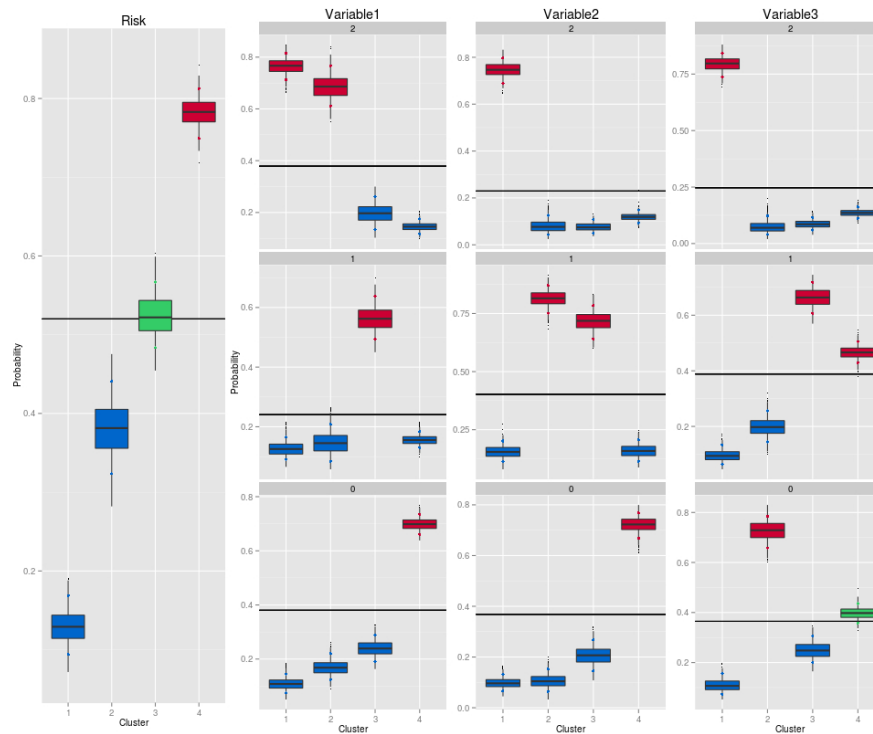
$$\text{logit}\{p(Y_i = 1|\theta_{Z_i}, \beta, W_i)\} := \lambda_i = \theta_{Z_i} + \beta^T W_i.$$

Our framework takes into account the uncertainty associated with cluster assignments, that is, it employs model-based stochastic clustering and it is fitted using Markov chain Monte Carlo (MCMC) sampling methods. The sampler outputs a different clustering or partition of the data at each iteration, thereby coherently propagating uncertainty, additionally allowing for the number of clusters to vary. We propose postprocessing tools to examine this rich output and produce representative partitions, and we implement model-averaging techniques to assess the uncertainty associated with each cluster.

#### Sampling the Dirichlet Mixture Model

The R package includes the implementation of the dependent and independent slice samplers as proposed by Papaspilopoulos (2008) and Kalli et al. (2011), the best performing slice samplers to the best of our knowledge. We have also implemented the label switching moves proposed by Papaspilopoulos and Roberts (2008).

However, we still faced challenges to ensure convergence for real data. In Hastie et al. (2013) we report our findings and guidelines to improve mixing. In particular, we propose an additional label switching move and the use of the marginal model posterior as an indicator of convergence,



as well as discussing the pitfalls of choosing an optimal representative partition.

## Software

The Figure shows an example of a plot that can be obtained using our R package PReMiuM. This plot displays the representative clustering for 1,000 simulated individuals for whom a binary response and 3 categorical covariates have been observed. Four clusters have been identified by profile regression and the box-plots of the posterior distributions are one of the ways that the user can use to assess the uncertainty associated with each cluster.

PReMiuM can also produce predicted values based on probabilistic allocations or a Rao-Blackwellised estimate of predictions. Moreover, missing values in the covariates can be handled.

In addition to fitting mixtures, it may additionally be of interest to determine which covariates actively drive the mixture components. This is implemented in the package as an additional variable selection model following Papatthomas et al., 2012.

## Discussion

Profile regression has been used successfully in many areas, such as environmental epidemiology (Papatthomas et al., 2011) and for exploring gene-gene interactions (Papatthomas et al., 2012). It is particularly appealing for situations where covariate selection is problematic because of the wide range of possible predictors, collinearity, and the potential for interactions. This situation is common in health modelling but extends to many applied areas.

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## STUDENTS' CORNER

Isadora Antoniano and Antonio Ortiz

[isadora.antoniano@unibocconi.it](mailto:isadora.antoniano@unibocconi.it)  
[aao33@kentforlife.net](mailto:aao33@kentforlife.net)

“You should also take this special trouser with you”, said A to B. “Are you sure I'll use all this stuff? It's seems a lot”, replied B. “Don't worry, they are all necessary to make the perfect ride”, “Ok, £150 is worth it if I'm becoming a regular cyclist”, closed B. One week later, on a Saturday morning, around 8 am, A and B went on a two hour biking journey through the English fields of barley. Well, two hours according to A's estimation. After an hour and a half, B realised the journey wasn't getting to the way back stage, so B had the decency to ask A how long it'd take them to start on the way back to town. B replied it was a matter of 12 minutes. “Of course, not 10, not 15 minutes, but 12 minutes. That accuracy must mean A is sure where we are and the course we're taking”, thought B. After some soul loss (that's how B felt after breathing out so much more than breathing in), B had to ask if there was a misunderstanding in the time scale, because those “12 minutes” had felt like a complete XII Century Western Philosophy Seminar. Maybe B should have added to the £150 shopping, the £210 watch A recommended in the store. In that way, they would have been 99.99% synchronised and there would have been no doubts about the time they had been biking after the last question. A replied that the way back would begin just after the hill they were ascending and that it'd take them five more minutes to get to the top. This time, A was kind of accurate: the hill stopped around five

minutes later. However, there was a little detail: that point wasn't the top of the hill, but a saddle point, so more cycling was necessary. Some minutes after, the top of the hill was reached by both protagonists. It's obvious how emphatically B was planning to complain about A's time scale as soon as they got to the turning point. But A had a hidden card: at the very top of the hill, there was a nice pub where A and B could have a beer and a wonderful brunch (as wonderful as any food can taste after cycling three hours shy). In brief, the journey took them around five hours, including the pub time, with no hard-feelings between A and B. Oh, and B never became a regular cyclist.

On a different occasion, D was strolling around the University, as aloof as usual, and with his usual grumpy face. C bumped into D and asked him what was wrong. “It's nothing, I'm just confused with some concepts”, said D. “What is it about?” replied C. “Have you heard about the Chavez-Suarez theorem?” asked D. “I have read something about it”, answered C. “Well, you know the variables must be Darkinian in order to apply the theorem. However, the variables I'm working with may not satisfy the third property”, stated D. “Oh, there must be a way to overcome that”, assured C. “Yes, there must be, I have to find it. I will”, finished D. That night, D couldn't sleep trying to find a way to solve this problem (the booster he drunk during the night might have had something to do with that as well). Around noon, D found that C had sent him an email around 8 am (D is not in the habit of checking his email before 10:30 am, he thinks it can spoil his second breakfast

very easily) regarding his problem. The email recited as follows: “D, I think I found a solution for your problem. I looked into the Donald-Osh book and found that, by Sustakov’s Lemma, the third property is not necessary for the Chavez-Suarez theorem if your Darkinian variables have a compact domain. I have the book with me, so you can come whenever you want to borrow it...I hope you find the £100 you lost last week, have you checked under your bed? Sometimes crazy things happen”. Fortunately, C was right: the notes were under D’s bed and the variables did satisfy the properties of the Chavez-Suarez theorem. D never knew what to be more thankful for: the money or the research problem solution (that money gave him the chance to eat properly during the whole following week).

In both stories, our current guest for the Student Voices section plays a roll. Specifically, he plays A and C, respectively. I tried to keep the stories as accurate as possible. However, for dramatization purposes, some details had to be made up (I hope you didn’t waste any time looking for the Chavez-Suarez theorem or the term Darkinian). Our guest’s name is Juan Carlos. In both stories I wanted to portrait a different “face” of his. On one side, he is fascinated by lots of different topics and is quite accurate in what he studies. He achieves a deep understanding of whatever he’s into. On the other hand, well, we could see some inaccuracy in the biking story. However, this inaccuracy shouldn’t be judged lightly; let me explain to you where it comes from. I’ve known him for a while, and one of the very first things I remember he told me, was that he liked going out for walks to think about the maths in his projects. I could comprehend the concept, but I couldn’t imagine myself out there in the English fields of barley thinking about a research project (I prefer strolling around the University with a grumpy face). So, dear Students’ Corner audience, picture Juan Carlos’s mind while biking (and in many other hobbies he has), drifting to another place, where Finance and Bayesian Nonparametrics can live happily together. Imagine yourselves inside this place, then, how easy would it be to distinguish between a 12 minutes span and, say, half an hour? And, what a better way to live your research than developing it while enjoying a beloved hobby!

However, from both stories we can get a common factor of Juan Carlos: he’s always eager to help others, regardless of the full agenda he

usually has. Being humanitarian is a feature of his, even bigger than being the deserved winner of the Theory and Methods Savage Award of 2011. In brief, if by any chance you find out you’re in a Seminar where Juan Carlos is, do not hesitate to invite him to join you in that students’ corner of yours. However, if some of you are planning a biking/jogging session and he’s the guide, please get a GPS and make sure to find your own way back whenever you feel like it.

## Student Voices

by Juan Carlos Martínez-Ovando

[juan.martinez@banxico.org.mx](mailto:juan.martinez@banxico.org.mx)

Hello! I was born and grew up in Mexico City. I obtained a Bachelor’s degree in Actuarial Science from ITAM and a Master’s degree in Statistics from the Autonomous National University of Mexico, under the supervision of Professor Eduardo Gutiérrez-Peña. Before pursuing the Ph.D., I worked at the Central Bank of Mexico (BofM, hereafter) and at Oportunidades, a social-development programme of the Mexican Government, among some other places. I completed my doctoral studies in Statistics at the University of Kent, under the supervision of Professor Stephen G. Walker. I also spent a year at the University of Turin and Collegio Carlo Alberto, having Professor Igor Prünster as my tutor. I am interested in Bayesian statistical methods and applications, with particular emphasis in non- and semi-parametric procedures for time-series data and other dependence structures. I have taught courses in different subjects of Statistics, at undergraduate and graduate level, in universities in Mexico and the UK. Some of my hobbies are: running, cycling and practising yoga. Reading and listening to music are very enjoyable activities for me too.

Currently, I work as a Researcher in Statistics and Econometrics at the General Directorate for Economic Research in the BofM. My work at the Bank exposes me to new and challenging Macroeconomic and Statistical problems arising from practice. My job allows me to be involved with academia still. However, the research we develop at the bank must be policy-oriented, according to the Bank’s interest. A good aspect of this is that one can find many interesting and challenging problems in this everyday practice, that require

the formulation of rigorous answers; when more amusing and interesting problems arise. I have been doing research about important and sensible subjects of the Mexican economy and its determinants, serving as an Economic advisor in conjunctural problems, and performing some managerial and policy related tasks.

I must say that my reincorporation at the Bank has not been easy at all—I do remember the words that Stephen gave me when I shared with him the idea of transiting to the bank, concerning how difficult it would be, and he was right, it has been hard, challenging and demanding—. The main reason of that difficulty, as many other applied Statisticians are perhaps well aware too, is that one needs to keep a balance between simplicity, and the beauty and formality of new sophisticated procedures, in order to make our developments transcend. Of course, this does not mean that research is really restrictive. I am allowed to explore more sophisticated and sensible procedures if the problem requires it; and the results are going to be more effective as long as a good communication strategy is implemented. I must say that developing good communication strategies is really important in practice. From my point of view, it is necessary to learn new ideas, paradigms and languages, and translate them to the language of Statistics in a bidirectional way. It has been very important developing an Economic intuition, as well. In that respect, colleagues and supervisors at the Bank have been very supportive and challenging too. The more I get to understand in Economics, the more questions rise in my mind. This aspect is enjoyable as well, as it brings me back to the student status again, and in a different discipline.

I have been working on aspects of Bayesian inference for finite populations, and on developing alternative procedures to combine time series data measured and published at different frequencies, for prediction and analysis. Both topics were motivated by specific problems that the Bank faces in practice. I have also focused my attention on the study of disaggregate and micro-level modelling of some Macroeconomic problems —this is a very important and challenging problem for economists, and I can foresee that Statistics and Machine Learning methods might have important contributions to the area—. The key point is to test if Macroeconomic abstracted models adequately match or describe the evidence found in thou-

sands and, sometimes, millions of micro-data. I am also involved in studying micro-foundations about how firms and economic agents determine their price and wage adjustments —I believe that Bayesian nonparametrics has a lot to say about this—, as well as the way in which that micro-evidence is connected to aggregate inflation and monetary policy rules. This issue is of particular relevance for the central bank's objectives. I have also been studying empirical aspects of economic growth theory, like regional and temporal dynamics and heterogeneity, local and international shock transmissions, etc. For that effect, many of the newly developments that we can find in Bayesian spatio-temporal modelling have been of great use. In similar matters, in the near future I am planning to move my attention towards the study of the linkage between financial markets and macroeconomics. Nowadays, I am also putting a lot of effort to keep track of the subjects I worked on, with Stephen, during my doctoral studies, and with some other collaborators and friends.

When I was invited to contribute to the Students' Corner of the bulletin, I was asked to perhaps explain the reasons that brought me back into the public service path, after completing my doctorate studies. The first question that I raised to myself was what I could possibly say of interest to the community, especially the young ones and students. After having further thoughts about it, and after a recent talk with Isadora over a recent conference in Milan, I understand that perhaps exposing the dilemma we face as students after graduating, concerning our professional development, might give some insights to other young fellows facing similar situations. Thus, here I go. I must say that my reasons to re-assume this path are myriad and complex, mostly personal, but I would like to make my best effort to explain some of them. I do believe that people pursuing research are looking for the opportunity of making a difference, in society and/or sciences —at least that was my personal motivation in pursuing a better understanding about Statistics during my early years as an undergraduate and graduate student and as a professional practitioner, and also the example I received from former teachers and colleagues—. Certainly, academia is a fascinating world where people develop wonderful ideas, and where a friendly and relaxed environment seems to be the constant. Hence, it provides an extraordinary space to make that difference.

However, we have also witnessed a gap between new theoretical developments and practical implementations in real life problems. Such a gap has been getting shorter with the development of new technologies and the effort of many people linking frontier knowledge to practice. By working at the BofM now, I do feel myself contributing to the reduction of that gap, from my very limited areas of knowledge. Research at the Bank is highly appreciated. Researchers are allowed to pursue research in a similar manner as is done at academic institutes, and to perform additional academic activities, such as mentoring/tutoring research assistants planning to go onto graduate school, and teaching at a university level. This is an unusual experience, as those activities are typically prohibited in most "applied places", like in industry and corporate business. I also find very rewarding the public service aspect involved in my current job; it makes me feel like re-attributing the benefits I received from society, at some extent. Essentially, what makes this job appealing to me is the possibility of combining research and practice, perhaps not in a pure way as I would have done in academia, but with the possibility of linking that research to real life problems. With the current situation we live around the world, there are other considerations in terms of security that I did not disregard, but I must be honest in saying that this was not the most important want. There are, of course, some other reasons of personal character which I am afraid I cannot disclose now. Summarizing, the combination of factors I briefly described above led me to work where I am now. It was not an easy decision to make, from a personal and professional view point, but nothing in life is easy. And, after making this decision, I continue developing in myself the interest of learning about foundational aspects of Statistics and Probability, learning about new developments, and experiencing and questioning new methods. After all, Statistics is another hobby in life for me, as it is for many of you too.

Before concluding, I would like to thank my friends Isadora Antoniano and Antonio Ortiz, as well as Feng Liang, the Bulletin Editor, for opening to me this valuable window of opportunity to communicate with the ISBA community. Receive all of you my best wishes!

## Dissertation Abstracts

This time, our Student voices and Dissertation Abstracts authors coincide. But don't be shy! You can send us your contribution for either one of our sections separately. You can also ask questions to us, other students, or more seasoned Bayesians; comments, suggestions, complaints, anything you want. Make sure your voice is heard. Or if you know someone who may have an interesting story to share with us, let us know! We'll try to bug him or her, until we squeeze out a contribution.

And before moving on to this issue's Dissertation Abstract, I wish to remind you all that the very first j-ISBA meeting, the BAYSM2013, took place this month in Milan, followed by some specially organized activities at the 9th BNP meeting in Amsterdam... but if I'm not mistaken, you will be reading about this elsewhere.

### CONTRIBUTIONS TO THE BAYESIAN NONPARAMETRIC MODELLING OF TIME-SERIES DATA

by Juan Carlos Martínez-Ovando

[juan.martinez@banxico.org.mx](mailto:juan.martinez@banxico.org.mx)

School of Statistics, Mathematics and Actuarial  
Sciences,  
University of Kent, UK  
PhD Supervisor: Stephen G. Walker

In this thesis we develop flexible models for time-series analysis, inference and prediction. Two particular features of our models are: stationarity and flexible structural specifications. Stationarity provides us with a framework to conducting coherent prior-to-posterior inference and prediction, by means of a general representation theorem due to Maitra (1977, Transactions of the American Mathematical Society, 229, 209-225). Structural flexibility is incorporated in our models in the form of non- or semi-parametric mixture components, which gives a framework to produce robust statistical analysis by means of reducing structural assumptions to the minimum possible.

We build on the model construction framework developed by Pitt, Chatfield, and Walker (2002, Scandinavian Journal of Statistics, 29, 657-663) and Mena and Walker (2005, Journal of Time Series Analysis, 26(6), 789-805), with the aim of defining flexible and operational time-series



models. Specifically, we study and develop first-order dynamic mixture models with nonparametric transition distributions induced by mixtures of latent Beta-Stacy probability measures (the continuous version), which admits a parametric mixture invariant distribution. We also develop an extension to this model by considering a double-mixture of latent probability measures, a Beta-Stacy process mixed with respect to a discrete random distribution function. That gives rise to a model with both invariant and transition distributions non-parametrically specified. We also developed a multivariate version defined as a dynamic nonparametric Gaussian location-scale stationary mixture model, which aims at capturing stylized aspects such as asymmetry and heavy-tails in the data in a simple manner. We also give some insights about extensions in order to include exogenous information in the transition dynamics of the above models while preserving time-stability and a given invariant distribution. With exception of Mena and Walker (2007, *Journal of Statistical Planning & Inference*, 137, 3103-3112), the

latent-processes model construction framework has been restricted to first-order dependencies. In that respect, we develop novel idea to extend this framework in order to build up time-series models with arbitrarily higher-order of dependence. We show that the later model is being characterized by a system of lower order-transition distributions and invariant density which are coherent under marginalization.

We also develop prototype simulation algorithms to make the above models operational in practice. Those algorithms rely on trans-dimensional-samplers, latent-truncation procedures for mixtures, and traditional MCMC methods. Finally, we develop illustrations concerning the analysis and prediction of financial exchange-rate log returns and other multivariate time-series data, with application to constructing efficient investment portfolio strategies too. Other illustrations include the study of over-dispersed count-event time-series data. ▲



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