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## APPLICATIONS IN BUSINESS AND ECONOMICS

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ORGANIZER: DAVID BANKS, DUKE UNIVERSITY, USA

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### TALK 1: DYNAMIC TEXT NETWORKS

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SPEAKER: DAVID BANKS, DUKE UNIVERSITY, USA

Many applications (the Internet, Wikipedia) concern networks of documents. We mine the corpus that consists of all U.S. political blog posts in 2012. The intent is to use recent advances in dynamic network modeling to improve the topic discovery, and recent research on text mining to improve the network modeling. We describe a preliminary analysis based on the subset of blog posts that concern the shooting of Trayvon Martin, and then a full analysis of the entire corpus, at a lower level of resolution. The data were provided by MaxPoint Interactive, a computational advertising company that wants to use this methodology to better identify potential customers on-line.

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### TALK 2: MODELING COMPETING RISKS IN THE PRESENCE OF LONG TERM SURVIVORS

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SPEAKER: MERCY MARIMO, UNIVERSITY OF THE WITWATERSRAND, SOUTH AFRICA

Standard survival analysis methods model lifetime data where cohorts are tracked from the point of origin, until the occurrence of an event. If more than one event occur, a special model is chosen to handle competing risks. Moreover, if the events are defined such that most subjects are not susceptible to the event(s) of interest, standard survival methods may not be appropriate. The aim of the project was to follow up on cohorts from the point where vehicle finance loans originated to either default or early settlement events and compare survival and logistic modeling methodologies. The data typically had long term survivors with heavy censoring. Cause specific Cox regression models were fitted adjustments were made to accommodate a proportion of long term survivors. The corresponding Cumulative Incidence Curves were calculated to determine probabilities at a fixed horizon of 48 months. Logistic regression models were fitted per event type. Methodologies were compared using ROC curves and area under the curves. The results show that survival methods perform better than logistic regression methods when modelling lifetime data in the presence of competing risks and long term survivors. Joint work with Charles Chimedza (University of the Witwatersrand, South Africa).



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### TALK 3: LINK BETWEEN THE DEFAULT RATE AND THE ECONOMIC SITUATION

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SPEAKER: LAO KENAO, MINISTRY OF AGRICULTURE, LOME, TOGO

The goal of this study is to explain the evolution of default rate through macro-economic factors which highlight the fragility of enterprises facing the extreme macroeconomic shocks for the case of France. Tests of hypothesis are relative to: the evolution of the default rate is contracyclic of the economic activity; to seek whether the effect of economic situation on the default rate happens with lateness; to see if there is contagion effect between the default rates of the different finalities. Two approaches have been used through the descriptive analysis and the econometric modeling by using a Vector Error Correction Model (VECM) with exogenous variables. Results indicate that in short term, the default rates in the finalities of development, creation and financial restructuring can be explained by worsening of defaults in those same finalities but, at long term, the effects of contagion between finalities are noticed. Therefore, it is necessary to set up, a structural policy to boost economic activity, a circumstantial policy to create employment to stimulate domestic demand and competitiveness. Finally, to bring down average rate of interest on the monetary market so as not to harm the banks. This is a joint work with Mawulom Komla Agudze (Graduate School of Economic and Management, ITALY) and Mahamadou Tankari (International Food Policy Research Institute, SENEGAL).