



The University of Chicago  
Department of Statistics

Master's Seminar

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**Observed Flow of Travelers in the U.S.-Mexico Border:  
Modeling and Decomposition Using RegARIMA**

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110 Eckhart Hall, 5734 S. University Avenue**

**ABSTRACT**

For more than 20 years, seasonal ARIMA models have been used to model economic time series, principally, in governmental institutions. Different programs have been developed to make the identification, estimation, and evaluation of these models a practical application. In this study, I use X12-ARIMA to model a set of time series using regARIMA models. In these models, the mean function is described by a linear combination of regressors, while the covariance structure is described with an ARIMA process. The time series I analyze are obtained from the Border Travelers Project of the Central Bank of Mexico, who has collected this information for the past two decades. I find that Easter has a significant effect in the performance of the series, and two of them present a significant trading-day effect. Other events that have a significant effect in the model were the September 11 attacks, which have a different effect depending on the means of transportation used when crossing the border. In addition to the model results, I include a set of different diagnostics such as sliding spans and out-of-sample forecasts to assess the quality of the model. The procedure described in this paper can be implemented as a standard analysis for an important number of time series generated by the Central Bank of Mexico. This standard routine will provide a basic description of the data and highlight interesting features that may direct to further modeling and research.