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DEPARTAMENTO DE MATEMÁTICA

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**Departamento de Matemática**
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## Seminar

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# Panel data analysis with R

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**Abstract:** Panel data is broadly used in several fields like finance, biology, environment, etc. Cross sectional data refers to registry of some data set referring to units in one particular moment (observation of some variables from individuals, firms, banks, usually independent). A different type of data (usually dependent) is when data of one or more variables are collected over time (time-series). In many situations, it makes sense to collect information of the same units at different moments. This provides a framework that combines cross-sectional and time series data providing more informative data. For example, the governs collect several firm indicators every year. Panel data models cover this type of data, allowing to retrieve more information about the data, namely the existence of some time effect or individual effect. Estimation methods vary and include Least Squares (LS) method which may be applied in different ways, depending on the assumptions of the model. Like in other type of data, it is frequent to have outliers when dealing with real data. These atypical observations might highly affect the LS estimators. One other problem arises when real data don't verify the assumptions of the model. In such cases, the robust estimators present a better option. The authors' recent work addresses to this problem, applying robust methods to panel data model estimation. They have proposed a robust estimator and performed simulations to compare it with some of the classical proposals.

**Keywords:** Panel data, FGLS, robust estimation.

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