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Seminar

VECTOR AUTOREGRESSIVE MODEL WITH DYNAMIC FACTORS

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**March 15, 2019 | 12.30 p.m. | Aula Benvenuti
Campus S. Caterina**

Abstract : www.stat.unipd.it/fare-ricerca/seminari

VECTOR AUTOREGRESSIVE MODEL WITH DYNAMIC FACTORS

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We study a Vector Autoregressive (VAR) model of order p augmented by unobservable common factors with a dynamic described by a VAR process of order q . This state-space specification is useful to define a network of interconnectedness and measure separately the impulse responses to either systematic or idiosyncratic shocks. We show that the state-space parameters are identifiable from the autocovariance function of the observed process. We estimate the model by means of a three-step procedure in closed-form, which combines an eigenvalue-eigenvector matrix decomposition and Instrumental Variable (IV) estimation. We study the asymptotic and finite-sample properties of the parameter estimators and of rank tests for selecting the number of unobservable factors and VAR orders p and q . In an empirical application we investigate which are the dynamic common factors that drive the co-movements in the daily realized volatility series of thirteen US financial institutions during the 2008 financial crisis.