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A multivariate stochastic model with and without external random interventions are developed. Random intervention process is described by a continuous jump process. The developed mathematical model is utilized to examine the relationship between different energy commodity spot prices. Also, an interconnected discrete-time dynamic system of local sample mean and variance processes is developed. The byproduct of this work initiates alternative innovative approach for state and parameter estimation problems for continuous time stochastic dynamic models. Moreover, the presented Local Lagged adapted Generalized Method of Moments (LLGMM) exhibits the balance between model specification and model prescription of continuous time dynamic processes in biological, chemical, engineering, financial, medical, physical and social sciences. Using the developed multivariate stochastic model with and without external random interventions, the usefulness of the LLGMM approach is illustrated by applying to energy commodity data sets for state and parameter estimation problems. Moreover, the forecasting and confidence-interval problems are also investigated. (Received September 06, 2014)