# Factor-augmented functional regression with an application to electricity price curve forecasting

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We propose a function-on-function regression model for time-dependent curve data that is consistently estimated by imposing factor structures on the regressors. A novel integral operator *D* identifies the predictive low-dimensional component with associated factors that are guaranteed to be correlated with the dependent variable. In order to consistently estimate the correct number of factors for each regressor, we introduce a functional eigenvalue difference test. The model is applied to forecast electricity price curves on three different energy markets. We show that the prediction accuracy of the factor-augmented functional regression is comparable to popular machine learning approaches while also providing interpretable insights into correlation structures of electricity prices.