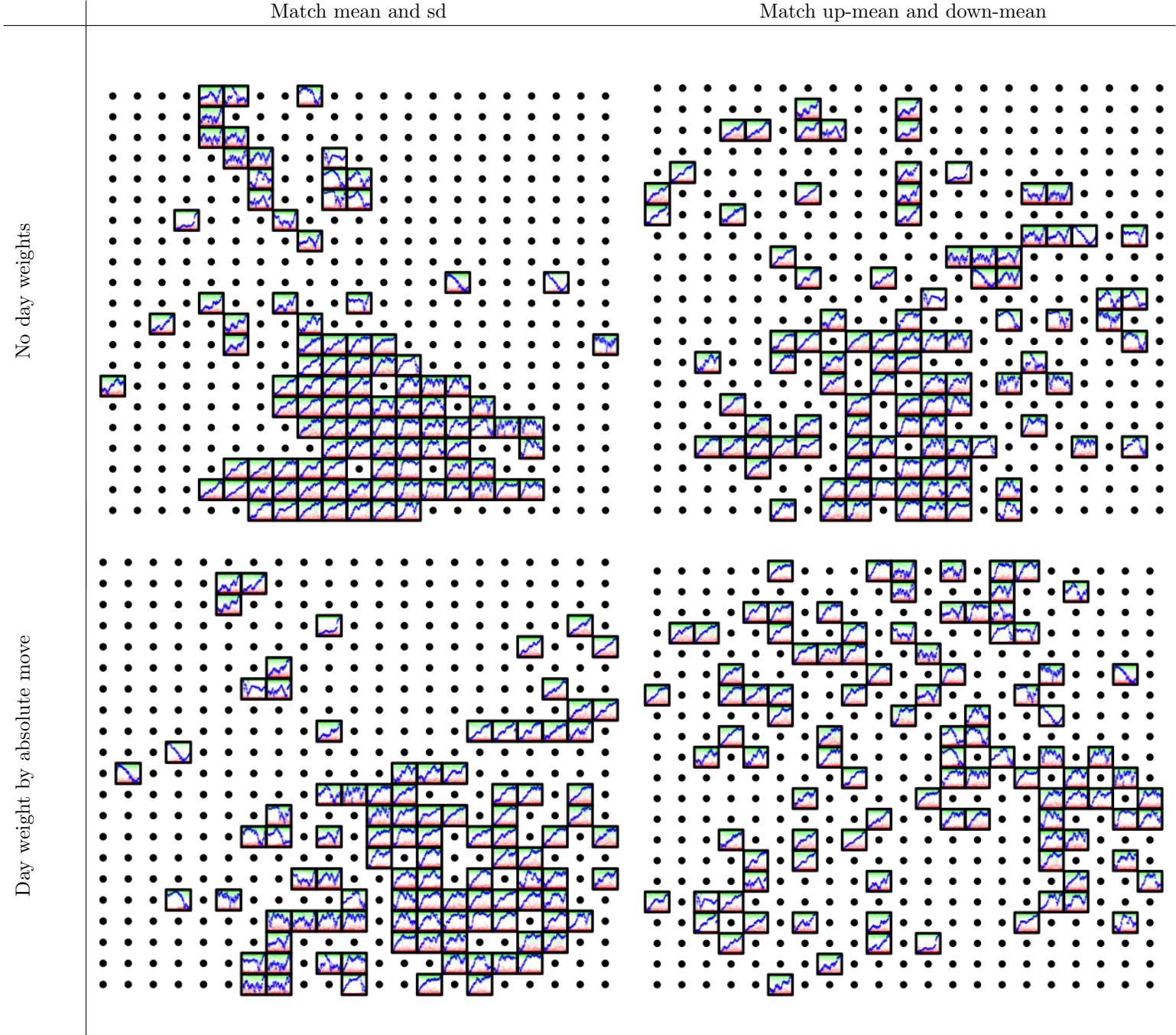


Evaluating equity return models

We generate synthetic stock returns by fitting 4 different models to a dataset of 100 stock returns over a 5 year period. Each model is calibrated to each stock 3 times, producing a dataset of 300 synthetic stock returns per model. For each model, all returns (both real and synthetic) are plotted and the plots laid out using visual similarities as a distance measure. We observe that model accuracy influences the shape of these resulting layouts. More accurate models result in higher levels of mixing between synthetic and real returns. Inaccurate models produce layouts with clear separation between real and synthetic returns. We can use this observation to evaluate modelling accuracy.

The layouts generated in this manner are presented below. Plots representing actual returns are shown at the appropriate location, whereas synthetic returns are represented by a black dot (●):



The above example indicates that both up/down return asymmetry and stochastic volatility appear to be important when modelling stock returns. This importance appears to be approximately balanced.