



UCSB ERP Prediction Contest

HTAA, LLC

January 9, 2020

Our Philosophy

To provide, on average, risk adjusted outperformance versus the S&P 500 benchmark

What we do:

- ▶ Make intelligent bets on market direction using public and proprietary information
- ▶ Use multiple information sources, across different horizons
- ▶ Combine different views into an optimal prediction
- ▶ Research, innovate and adapt to new conditions, ideas and methods

What we don't do:

- ▶ Curve fit or overoptimize
- ▶ Impose strong qualitative views/priors
- ▶ Allow emotion to dictate policy or allocations
- ▶ Claim to have any magic timing formula

What do we capture?

- ▶ Fundamental and Economic Factors
- ▶ Persistent Statistical Factors
- ▶ Sentiment and Behavioral Factors
- ▶ Volatility/Risk Timing Factors

About Us

- ▶ blog: <http://www.hulltactical.com/blog/>
- ▶ performance report:
<http://www.hulltactical.com/strategy-performance/>
- ▶ @HullTactical

Daily Report

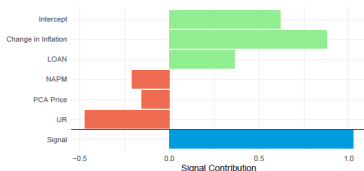


Daily Report Monthly Model

Model Description

The monthly model employs stepwise weighted least squares to find the most significant predictors from a group of 16 diverse variables. The current estimate uses 5 of the 15 variables. The regression finds the historical sensitivity (the regression coefficient) of the next month's excess return on the stock market to each variable. Each variable's forecast contribution is the product of its coefficient and value. The forecast is the sum of the forecast contributions. The forecast is adjusted by dividing by the root mean squared error of the regression (RMSE). A larger RMSE is accompanied by a smaller bet size, as a result. The RMSE adjusted forecast is multiplied by five to scale the bets to a range between 0% and 150%. If a scaled bet falls below 0%, the actual bet is set to 0%. Likewise, if a scaled bet exceeds 150%, the actual bet is set to 150%.

Monthly Model Indicators



	Coefficient	Value	ERP forecast contribution	Signal contribution
Intercept	0.49	1.00	0.49%	61.70%
Change in Inflation	0.52	1.35	0.70%	87.77%
LOAN	-0.39	-0.75	0.29%	36.31%
NAPM	0.53	-0.31	-0.17%	-20.74%
PCA Price	-0.70	0.18	-0.12%	-15.48%
UR	-0.47	0.80	-0.38%	-47.29%
Signal			0.82%	102.28%

- Updated at 4:15pm ET
- Includes all published models
- [Latest report](#)

Our Papers

- ▶ [A Practitioner's Defense of Return Predictability](#)
(published in the Journal of Portfolio Management)
- ▶ [Return Predictability and Market-Timing: A One-Month Model](#)
(published in the Journal of Investment Management)
- ▶ [Seasonal Effects and Other Anomalies](#)

Six-Month Model: Key Factors

- ▶ Inflation
- ▶ Default Spread
- ▶ FRB Loan Officer Survey
- ▶ New Orders New Shipments
- ▶ Baltic Dry Index
- ▶ PCA of Price Ratios
- ▶ Bond Yield
- ▶ Term Spread
- ▶ Cointegrating Residual of Consumption, Assets, and Wealth (CAY)
- ▶ Variance Risk Premium
- ▶ Implied Correlation
- ▶ Ratio of Stock Price to Commodity Price
- ▶ Oil Price Shocks
- ▶ Short Interest

Six-Month Model: Statistical Model

- ▶ Ordinary Least Square (OLS) regression
- ▶ Correlation Screening (CS):

$$R_{m,t \rightarrow t+130}^e = \alpha_{CS} + \beta'_{CS} \tilde{X}_t + \epsilon_{CS,t \rightarrow t+130}$$

$$\tilde{X}_t = \begin{bmatrix} X_{1,t} / |\rho_{1,m}| > 0.1 \\ X_{2,t} / |\rho_{2,m}| > 0.1 \\ \dots \\ X_{16,t} / |\rho_{16,m}| > 0.1 \end{bmatrix}$$

$$\rho_{i,m} = \text{Corr}(x_{i,t}, R_{m,t \rightarrow t+130}^e)$$

- ▶ Y_t : 6-month excess market returns
- ▶ Overlapping data
- ▶ Monthly refits
- ▶ Daily signals

One-Month Model: Key Factors

- ▶ Change in Inflation
- ▶ Industrial Production
- ▶ Credit Risk Premium
- ▶ Slope of the Interest Rate Term Structure
- ▶ Commodity Price
- ▶ Housing Starts
- ▶ Exchange Rate
- ▶ FRB Loan Officer Survey
- ▶ Delinquencies
- ▶ New Orders New Shipments
- ▶ Baltic Dry Index
- ▶ National Association of Purchasing Managers
- ▶ Change in Unemployment Rate
- ▶ Momentum
- ▶ PCA of Price Ratios

One-Month Model: Statistical Model

- ▶ Weighted Least Square (WLS) regression with Stepwise Variable Selection
- ▶ Objective function:

$$\min_{\beta_j} \sum_{t=1}^T \rho^{T-t} (Y_{t+1} - \alpha - \sum_{j=1}^m \beta_j Z_{j,t})^2$$

- ▶ Y_t : 1-month excess market returns
- ▶ ρ : decay factor set to 0.99 (implies a half-life of approximately 60 months)
- ▶ Non-overlapping data
- ▶ Monthly refits
- ▶ Daily signals

Anomalies

- ▶ Seasonal Effects
 - ▶ Turn of The Month (TOM)
 - ▶ Sell-in-May (SIM)
 - ▶ January Effect
 - ▶ Weekend Effect
- ▶ Announcement Drifts
 - ▶ Federal Open Market Committee (FOMC)
 - ▶ U.S. Macroeconomic Announcements
- ▶ Trend Models

One Day Model

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