Commitment of traders (COT) analysis and modeling

Preliminary results

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# Executive Summary

* Best Performing Assets (Highest OOS Performance)
  + Nowcasting Leaders:
    - Brent Commercials: outstanding performance (0.83-0.87 for Long/Short positions)
    - WTI Managed Money: strong Net positioning predictability (0.53-0.54)
    - RBOB Commercials: solid across all position types (0.44-0.51)
  + Forecasting Leaders:
    - Brent Commercials: best forecasting capability (0.46-0.47 for Long/Short)
    - RBOB Commercials: consistent forecasting performance (0.32-0.42)
    - WTI Commercials: moderate but stable performance (0.39-0.40)
* Non-linear models dominate, especially Random Forest and Extra Random Trees.
* Nowcasting vs Forecasting Performance
  + **Nowcasting Consistently Superior**
    - **Average nowcasting performance**: 0.30-0.50+ across assets
    - **Average forecasting performance**: 0.05-0.25 across assets
    - **Performance degradation**: 50-80% drop from nowcasting to forecasting
  + **Notable Forecasting Successes:**
    - **Brent Commercials:** Maintain strong forecasting (0.46-0.47)
    - **RBOB Commercials:** Decent forecasting capability (0.32-0.42)
    - **WTI Commercials:** Moderate forecasting performance (0.39-0.40)
* Key Predictive Features by Asset
  + WTI: Heavy reliance on price change features and synthetic spreads
  + Brent: Position-to-open interest ratios highly predictive
  + HO: Volatility measures (20D rolling volatility) important
  + RBOB: Commercial net position changes and volatility crucial

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| WTI Commercials | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'F3\_RolledPrice\_change'  'prior\_5D\_F1\_OI\_change'  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1200,  'max\_depth': 20,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.46 |
| Short | 'F3\_RolledPrice\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 25,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.41 |
| Net | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 600,  'max\_depth': 11,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.116 |
| Long/OI | 'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 27,  'min\_samples\_leaf': 8,  'max\_features': 'log2'}} | 0.21 |
| Short/OI | 'F3\_RolledPrice\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 30,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.12 |
| Net/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_report\_Commercial\_NetPosition\_change',  'F1\_RolledPrice\_change' | ols | 0.1 |
| Forecasting | Long | 'prior\_report\_CommercialShortPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 800,  'max\_depth': 18,  'min\_samples\_leaf': 2,  'max\_features': 'sqrt'}} | 0.39 |
| Short | 'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 12,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.4 |
| Net | 'prior\_5D\_AGG\_OI\_change',  'F3\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change' | ols | 0.05 |
| Long/OI | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 14,  'min\_samples\_leaf': 7,  'max\_features': 'sqrt'}} | 0.226 |
| Short/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 22,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.228 |
| Net/OI | 'F1\_RolledPrice\_change',  'F2\_RolledPrice\_rolling\_20D\_volatility',  'prior\_5D\_F1\_OI\_change' | ols | 0.09 |

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| WTI Managed Money | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_AGG\_OI\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 200,  'max\_depth': 17,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.28 |
| Short | 'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'hgbm',  'params': {'learning\_rate': 0.10057690178153984,  'max\_depth': 7,  'max\_iter': 100,  'l2\_regularization': 0.6842330265121569,  'max\_leaf\_nodes': 121}} | 0.38 |
| Net | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'F3\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 200,  'max\_depth': 22,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.53 |
| Long/OI | 'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'F3\_RolledPrice\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 3,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.35 |
| Short/OI | 'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 800,  'max\_depth': 17,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.4 |
| Net/OI | 'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 200,  'max\_depth': 30,  'min\_samples\_leaf': 9,  'max\_features': 'log2'}} | 0.54 |
| Forecasting | Long | 'F2\_RolledPrice\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 28,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.07 |
| Short | 'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'F2\_RolledPrice\_rolling\_20D\_volatility',  'F2\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 800,  'max\_depth': 10,  'min\_samples\_leaf': 2,  'max\_features': 'log2'}} | 0.11 |
| Net | 'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'F2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'hgbm',  'params': {'learning\_rate': 0.0011976520841200263,  'max\_depth': 8,  'max\_iter': 800,  'l2\_regularization': 0.9664981016783335,  'max\_leaf\_nodes': 21}} | 0.08 |
| Long/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'ols',  'params': {}} | 0.09 |
| Short/OI | 'F3\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 800,  'max\_depth': 17,  'min\_samples\_leaf': 2,  'max\_features': 'sqrt'}} | 0.11 |
| Net/OI | 'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 200,  'max\_depth': 3,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.08 |

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| Brent Commercials | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'prior\_report\_CommercialLongPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'F2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'ridge',  'params': {'alpha': 926.5660759455584}} | 0.83 |
| Short | 'prior\_5D\_F1\_OI\_change',  'F3\_RolledPrice\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'ridge',  'params': {'alpha': 926.5660759455584}} | 0.87 |
| Net | 'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_report\_Commercial\_NetPosition\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 19,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.53 |
| Long/OI | 'prior\_report\_CommercialShortPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'F2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 30,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.55 |
| Short/OI | 'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'F3\_RolledPrice\_change' | {'model\_name': 'ols',  'params': {}} | 0.44 |
| Net/OI | 'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 600,  'max\_depth': 30,  'min\_samples\_leaf': 5,  'max\_features': 'sqrt'}} | 0.55 |
| Forecasting | Long | 'prior\_report\_CommercialShortPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 22,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.46 |
| Short | 'prior\_report\_CommercialLongPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 12,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.47 |
| Net | 'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'ridge',  'params': {'alpha': 933.6044419798662}} | 0.08 |
| Long/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'lasso',  'params': {'alpha': 1.156732719914599}} | 0.31 |
| Short/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 17,  'min\_samples\_leaf': 2,  'max\_features': 'sqrt'}} | 0.16 |
| Net/OI | 'prior\_report\_Commercial\_NetPosition\_change',  'F3\_RolledPrice\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'lasso',  'params': {'alpha': 1.156732719914599}} | 0.13 |

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| Brent Managed Money | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 400,  'max\_depth': 27,  'min\_samples\_leaf': 6,  'max\_features': 'sqrt'}} | 0.49 |
| Short | 'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 30,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.35 |
| Net | 'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 400,  'max\_depth': 22,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.52 |
| Long/OI | 'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 200,  'max\_depth': 24,  'min\_samples\_leaf': 8,  'max\_features': 'sqrt'}} | 0.55 |
| Short/OI | 'F3\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1200,  'max\_depth': 3,  'min\_samples\_leaf': 5,  'max\_features': 'sqrt'}} | 0.5 |
| Net/OI | 'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 25,  'min\_samples\_leaf': 6,  'max\_features': 'log2'}} | 0.53 |
| Forecasting | Long | 'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'ols',  'params': {}} | 0.06 |
| Short | 'F2\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 200,  'max\_depth': 24,  'min\_samples\_leaf': 8,  'max\_features': 'sqrt'}} | 0.10 |
| Net | 'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'ridge',  'params': {'alpha': 4.473429410462694e-05}} | 0.10 |
| Long/OI | 'F2\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 23,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.22 |
| Short/OI | 'prior\_5D\_F1\_OI\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 27,  'min\_samples\_leaf': 8,  'max\_features': 'log2'}} | 0.29 |
| Net/OI | 'F3\_RolledPrice\_rolling\_20D\_volatility',  'F3\_RolledPrice\_change' | {'model\_name': 'ols',  'params': {}} | 0.04 |

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| HO Commercials | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'prior\_5D\_F2\_OI\_change',  'F1\_RolledPrice\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 800,  'max\_depth': 18,  'min\_samples\_leaf': 4,  'max\_features': 'log2'}} | 0.09 |
| Short | 'F1\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 3,  'min\_samples\_leaf': 2,  'max\_features': 'sqrt'}} | 0.28 |
| Net | 'prior\_report\_CommercialShortPosition\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'F2\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 25,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.47 |
| Long/OI | 'prior\_cumulative\_5D\_F2\_Volume\_change',  'F1\_RolledPrice\_change',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 23,  'min\_samples\_leaf': 7,  'max\_features': 'log2'}} | 0.16 |
| Short/OI | 'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialLongPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_rolling\_20D\_volatility',  'F3\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 12,  'min\_samples\_leaf': 6,  'max\_features': 'sqrt'}} | 0.30 |
| Net/OI | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_CommercialShortPosition\_to\_openinterest\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 12,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.37 |
| Forecasting | Long | 'prior\_5D\_F2\_OI\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_Commercial\_NetPosition\_to\_openinterest\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 29,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.07 |
| Short | 'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 600,  'max\_depth': 19,  'min\_samples\_leaf': 5,  'max\_features': 'sqrt'}} | 0.11 |
| Net | 'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialLongPosition\_to\_openinterest\_change',  'prior\_report\_CommercialShortPosition\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 10,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.12 |
| Long/OI | 'prior\_report\_CommercialLongPosition\_change',  'prior\_report\_CommercialLongPosition\_to\_openinterest\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 29,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.013 |
| Short/OI | 'prior\_report\_CommercialShortPosition\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'F2\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 24,  'min\_samples\_leaf': 6,  'max\_features': 'sqrt'}} | 0.10 |
| Net/OI | 'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'ridge',  'params': {'alpha': 1.2391844377699232e-06}} | 0.09 |

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| HO Managed Money | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 30,  'min\_samples\_leaf': 4,  'max\_features': 'log2'}} | 0.35 |
| Short | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'F2\_RolledPrice\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 19,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.19 |
| Net | 'F1\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 12,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.38 |
| Long/OI | 'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 19,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.31 |
| Short/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'F1\_RolledPrice\_change',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1000,  'max\_depth': 24,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.25 |
| Net/OI | 'F1\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 3,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.33 |
| Forecasting | Long | 'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'prior\_5D\_AGG\_OI\_change',  'prior\_5D\_F2\_OI\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1200,  'max\_depth': 29,  'min\_samples\_leaf': 7,  'max\_features': 'log2'}} | 0.165 |
| Short | 'F3\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1200,  'max\_depth': 22,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.05 |
| Net | 'prior\_5D\_F2\_OI\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 1000,  'max\_depth': 7,  'min\_samples\_leaf': 6,  'max\_features': 'sqrt'}} | 0.17 |
| Long/OI | 'prior\_5D\_F1\_OI\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_5D\_F2\_OI\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 600,  'max\_depth': 5,  'min\_samples\_leaf': 4,  'max\_features': 'sqrt'}} | 0.2 |
| Short/OI | 'prior\_cumulative\_5D\_F2\_Volume\_change',  'F1\_RolledPrice\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 22,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.11 |
| Net/OI | 'prior\_5D\_F2\_OI\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 21,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.11 |

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| RBOB Commercials | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 12,  'min\_samples\_leaf': 10,  'max\_features': 'sqrt'}} | 0.49 |
| Short | 'prior\_report\_Commercial\_NetPosition\_change',  'F3\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 29,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.51 |
| Net | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_Commercial\_NetPosition\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 9,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.44 |
| Long/OI | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'F1\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 400,  'max\_depth': 30,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.36 |
| Short/OI | 'F2\_RolledPrice\_rolling\_20D\_volatility',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 400,  'max\_depth': 18,  'min\_samples\_leaf': 7,  'max\_features': 'sqrt'}} | 0.15 |
| Net/OI | 'prior\_report\_Commercial\_NetPosition\_change',  'F1\_RolledPrice\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1000,  'max\_depth': 8,  'min\_samples\_leaf': 8,  'max\_features': 'log2'}} | 0.42 |
| Forecasting | Long | 'prior\_report\_Commercial\_NetPosition\_to\_openinterest\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 600,  'max\_depth': 30,  'min\_samples\_leaf': 5,  'max\_features': 'sqrt'}} | 0.42 |
| Short | 'F3\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_CommercialLongPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 29,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.32 |
| Net | 'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_5D\_F2\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 800,  'max\_depth': 6,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.1 |
| Long/OI | 'prior\_report\_Commercial\_NetPosition\_to\_openinterest\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 18,  'min\_samples\_leaf': 2,  'max\_features': 'sqrt'}} | 0.32 |
| Short/OI | 'F3\_RolledPrice\_rolling\_20D\_volatility',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change',  'F3\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 800,  'max\_depth': 18,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.06 |
| Net/OI | 'prior\_report\_Commercial\_NetPosition\_to\_openinterest\_change',  'prior\_report\_CommercialLongPosition\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 3,  'min\_samples\_leaf': 1,  'max\_features': 'log2'}} | 0.32 |

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| RBOB Managed Money | | | | |
|  |  | Selected Features | Best Model | OOS Performance |
| Nowcasting | Long | 'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'F2\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 400,  'max\_depth': 22,  'min\_samples\_leaf': 8,  'max\_features': 'log2'}} | 0.40 |
| Short | 'F3\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 200,  'max\_depth': 27,  'min\_samples\_leaf': 10,  'max\_features': 'sqrt'}} | 0.15 |
| Net | 'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1000,  'max\_depth': 26,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.36 |
| Long/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 600,  'max\_depth': 15,  'min\_samples\_leaf': 3,  'max\_features': 'log2'}} | 0.39 |
| Short/OI | 'F3\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_cumulative\_5D\_F2\_Volume\_change',  'prior\_5D\_F2\_OI\_change' | {'model\_name': 'rf',  'params': {'n\_estimators': 400,  'max\_depth': 8,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.22 |
| Net/OI | 'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change',  'F1\_RolledPrice\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1000,  'max\_depth': 22,  'min\_samples\_leaf': 10,  'max\_features': 'log2'}} | 0.32 |
| Forecasting | Long | 'prior\_report\_ManagedMoney\_ShortPosition\_to\_openinterest\_change',  'F3\_RolledPrice\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'lasso',  'params': {'alpha': 9.714586134002047}} | 0.07 |
| Short | 'prior\_5D\_F1\_OI\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change',  'F3\_RolledPrice\_change',  'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_NetPosition\_to\_openinterest\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 30,  'min\_samples\_leaf': 1,  'max\_features': 'sqrt'}} | 0.09 |
| Net | 'F3\_RolledPrice\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'lasso',  'params': {'alpha': 9.714586134002047}} | 0.08 |
| Long/OI | 'F3\_RolledPrice\_rolling\_20D\_volatility',  'prior\_report\_SyntheticF1MinusF2\_RolledPrice\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change' | {'model\_name': 'ols',  'params': {}} | 0.34 |
| Short/OI | 'prior\_report\_ManagedMoney\_LongPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'prior\_report\_ManagedMoney\_ShortPosition\_change',  'prior\_cumulative\_5D\_F1\_Volume\_change',  'prior\_5D\_F1MinusF2\_openinterest\_change' | {'model\_name': 'lasso',  'params': {'alpha': 1.156732719914599}} | 0.16 |
| Net/OI | 'prior\_report\_ManagedMoney\_NetPosition\_change',  'prior\_report\_ManagedMoney\_LongPosition\_to\_openinterest\_change',  'prior\_cumulative\_5D\_F1MinusF2\_Volume\_change',  'prior\_5D\_F1\_OI\_change',  'prior\_5D\_F2\_OI\_change',  'prior\_5D\_AGG\_OI\_change' | {'model\_name': 'extra',  'params': {'n\_estimators': 1200,  'max\_depth': 21,  'min\_samples\_leaf': 3,  'max\_features': 'sqrt'}} | 0.23 |

# WTI

## Commercials

### Nowcasting

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a graph

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

### Forecasting

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer code

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

## Managed Money

### Nowcasting

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.



A screenshot of a graph

AI-generated content may be incorrect.

A screenshot of a computer

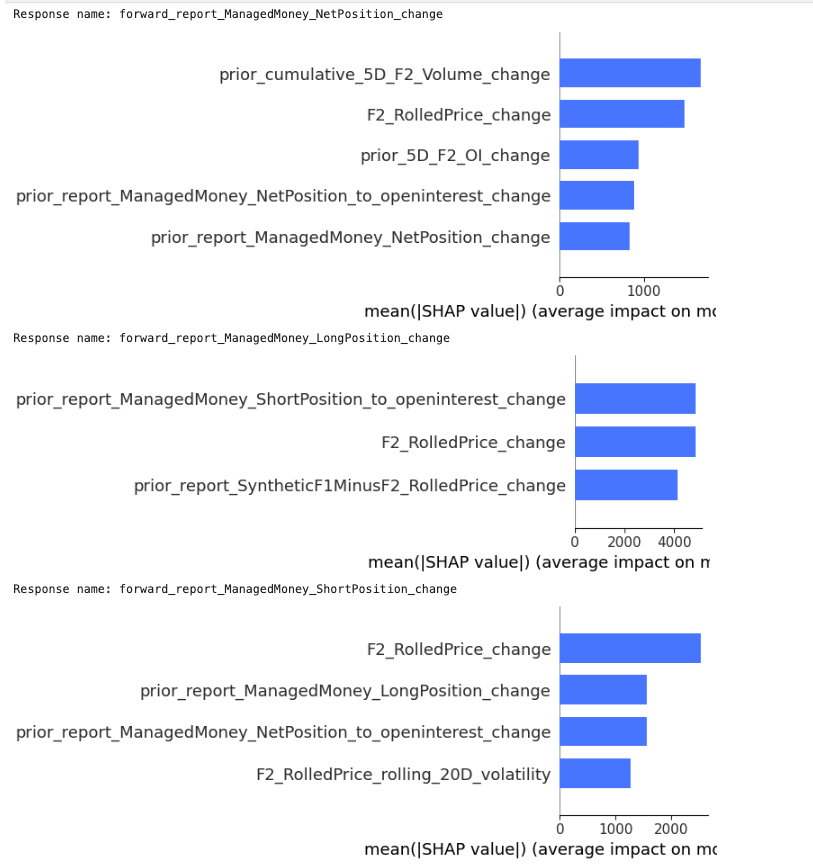
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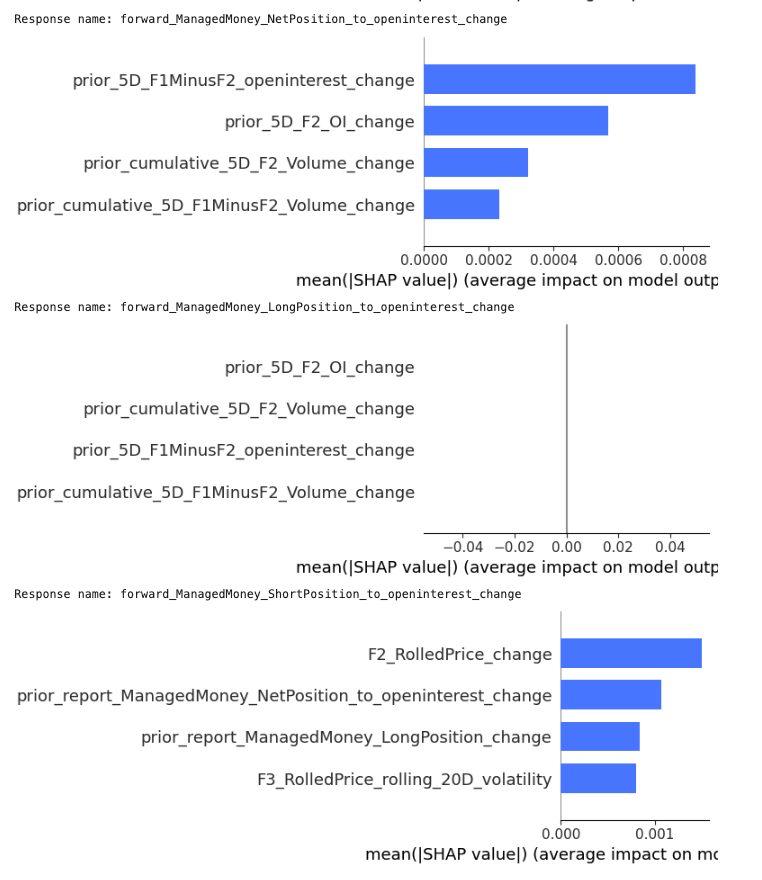
### Forecasting











# Brent

## Commercials

### Nowcasting

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

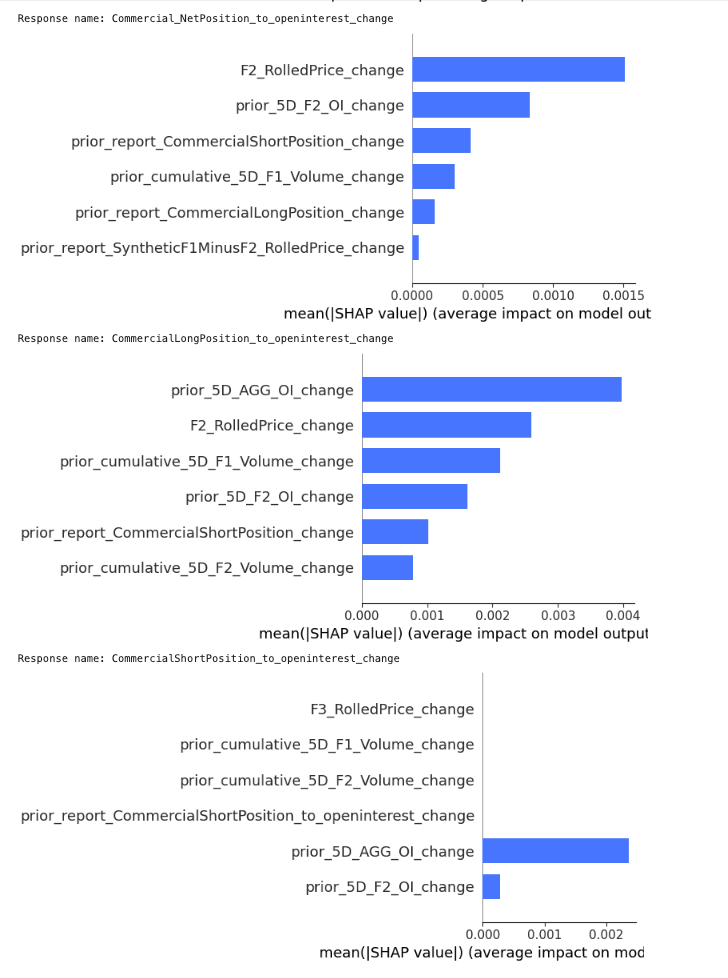
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A screenshot of a computer code

AI-generated content may be incorrect.

A screenshot of a computer

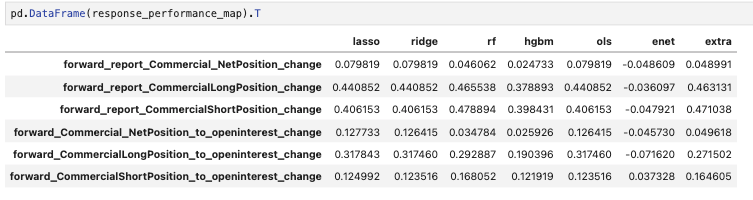
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### Forecasting

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AI-generated content may be incorrect.

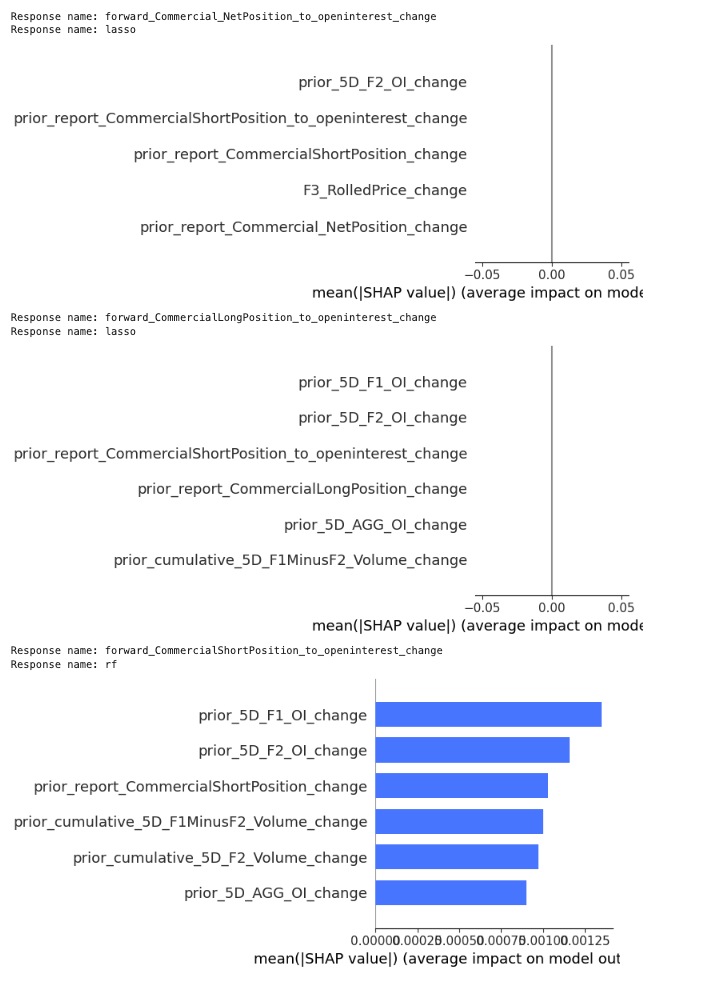


A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer screen

AI-generated content may be incorrect.



## Managed Money

### Nowcasting

A screenshot of a computer program

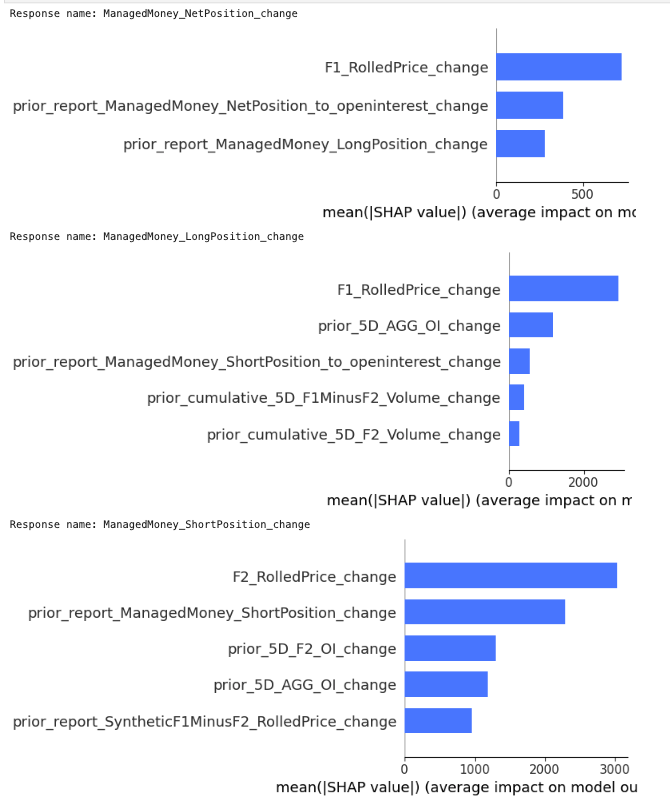
AI-generated content may be incorrect.

A screenshot of a graph

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.



A screenshot of a computer

AI-generated content may be incorrect.

### Forecasting

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

# Heating Oil

## Commercials

### Nowcasting

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

A screen shot of a computer

AI-generated content may be incorrect.

A screen shot of a computer

AI-generated content may be incorrect.

### Forecasting

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a graph

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

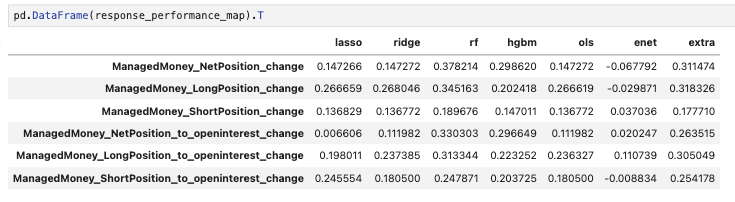
AI-generated content may be incorrect.

## Managed Money

### Nowcasting

A screenshot of a computer screen

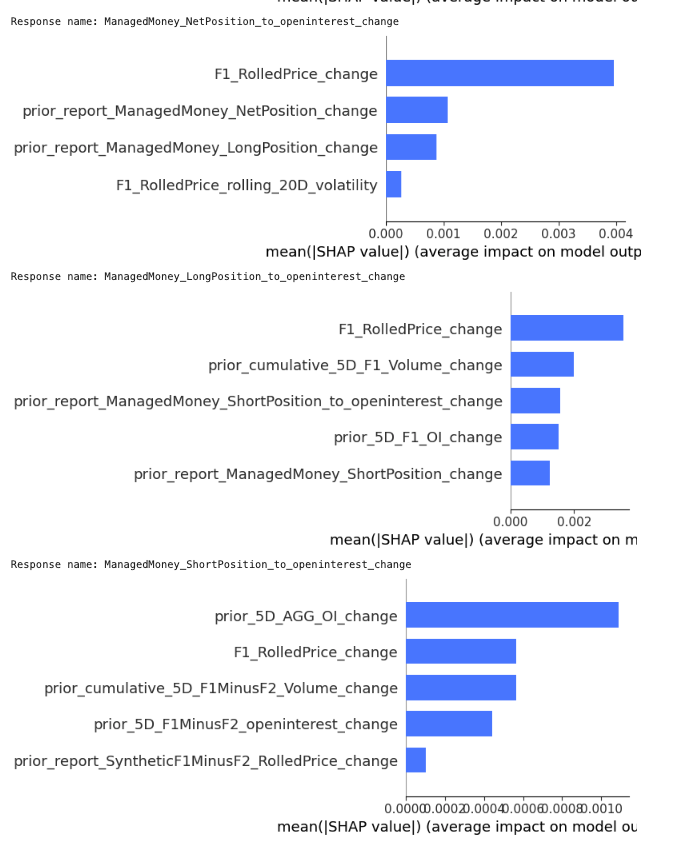
AI-generated content may be incorrect.





A screenshot of a computer

AI-generated content may be incorrect.



### Forecasting

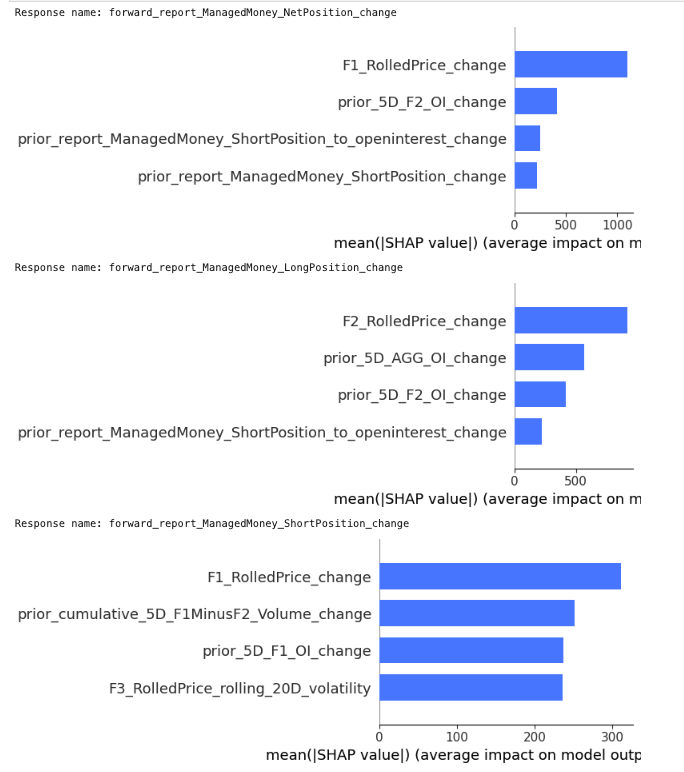


A screenshot of a table

AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.



A screenshot of a computer screen

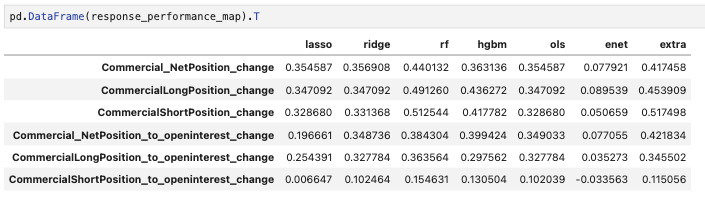
AI-generated content may be incorrect.

# RBOB

## Commercials

### Nowcasting





A screenshot of a computer code

AI-generated content may be incorrect.

A screenshot of a computer screen

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

### Forecasting

A screenshot of a computer program

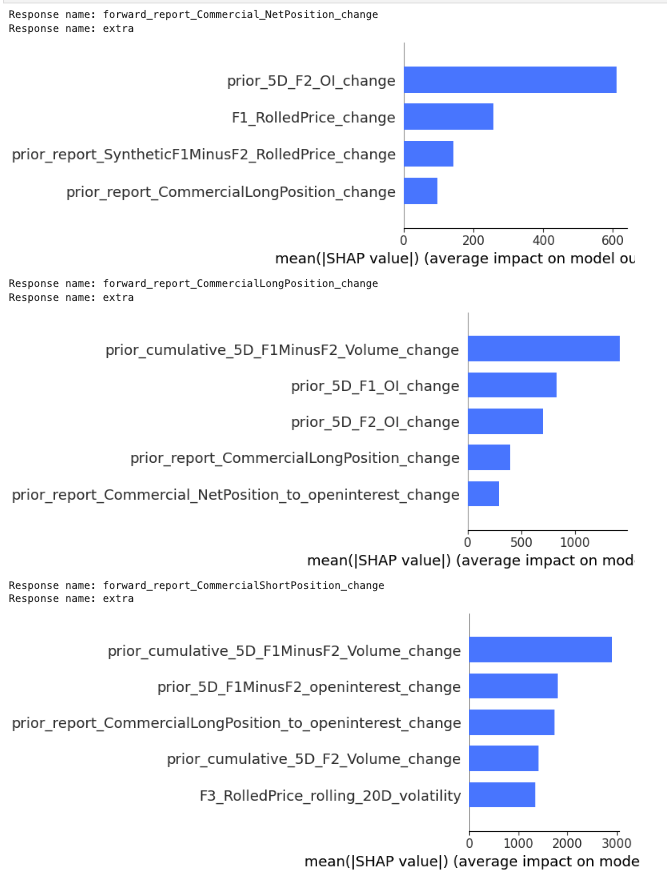
AI-generated content may be incorrect.

A screenshot of a graph

AI-generated content may be incorrect.

A screenshot of a computer code

AI-generated content may be incorrect.



A screenshot of a computer program

AI-generated content may be incorrect.

## Managed Money

### Nowcasting

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AI-generated content may be incorrect.

A screenshot of a graph

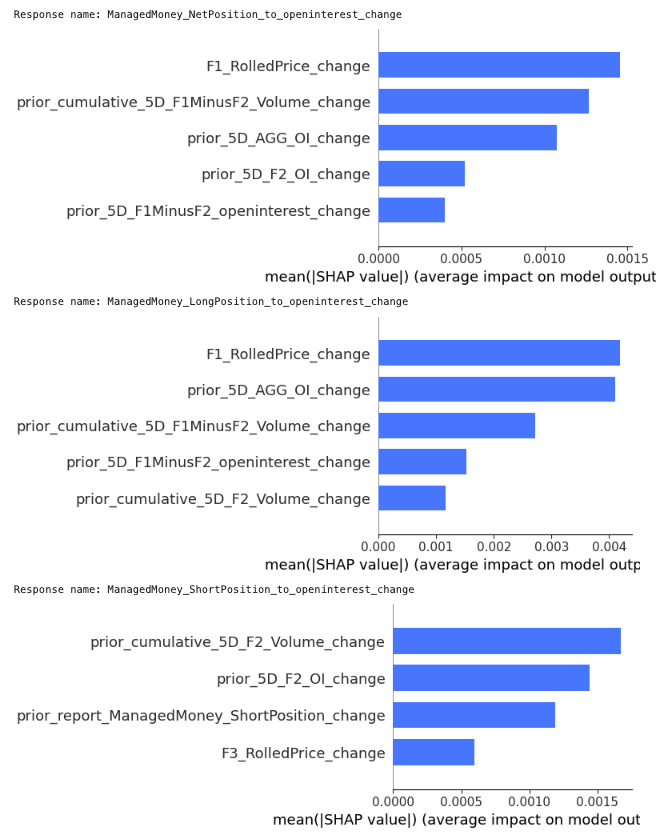
AI-generated content may be incorrect.

A screenshot of a computer program

AI-generated content may be incorrect.

A screenshot of a computer screen

AI-generated content may be incorrect.

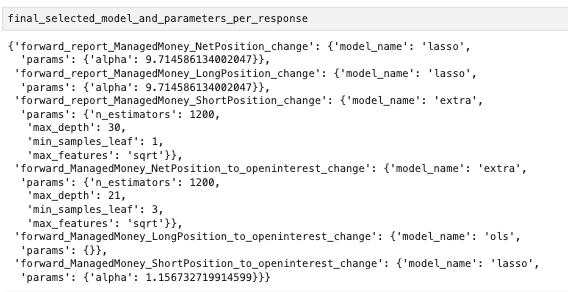


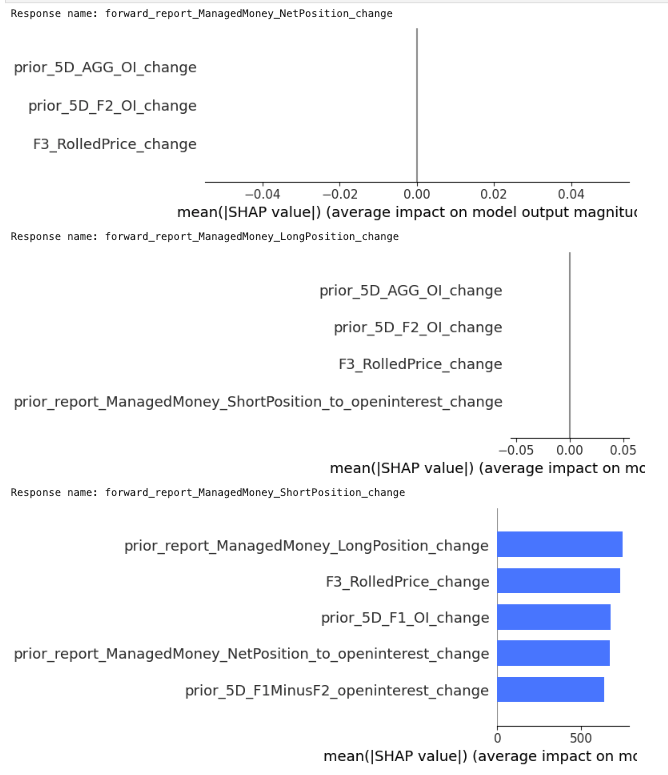
### Forecasting



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AI-generated content may be incorrect.





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AI-generated content may be incorrect.