Currency Anomalies

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Motivation

- Recent FX Literature Documents Cross-Sectional Excess Return Predictability
  - Momentum, Value, Term Spread, Output Gap, etc.
- What Explains Profitability of Systematic Trading Strategies?
  - Statistical bias/Data mining
  - Compensation for risk
  - Mispricing/Market inefficiencies
- Do Analysts Make Use of Currency Predictors?
  - Should exploit useful, publically available information

What We Find

- No Support for Data Mining
  - Profits do not drop in out-of-sample period (before publication)
- Evidence More Supportive of Mispricing than Risk Premia
  - Profits decline substantially (disappear) after strategies become publicly known
  - Publication effect greater for larger in-sample profits and lower arbitrage costs
  - Low persistence of currency ranks and strategy performance
  - Significant risk-adjusted strategy profits
- Analysts’ Forecasts are Inconsistent with Currency Predictors
  - Investors contribute to mispricing when trading on analysts’ forecasts
  - Analysts incorporate predictor information with a short lag
  - Analysts’ forecasts have incremental predictive power

Contribution

- First Study of Cross-section of Currency Predictors
  - Allows testing alternative explanations for currency predictability
  - Can combine predictors into aggregate measure with better signal to noise ratio
  - Allows drawing more general conclusions
  - Provides useful out-of-sample evidence given mixed findings in equities
- Currency Markets Provide Unique Setting and Data
  - High liquidity, low transactions costs, professional participants, no short-selling constraints
  - Data for realistic trade implementation and signal construction
  - Better data on analysts' forecasts
    - No horizon, seasonality, payout or optimism issues
    - Forecasts are for value of the asset (as opposed to fundamentals)

Currency Predictors

- Systematic, Cross-Sectional Trading Strategies
  - All currency predictors that can be constructed without proprietary data
  - Real-time data to avoid look-ahead bias
- Currencies from 76 countries
  - 20-30 exchange rates in a typical month
  - All exchange rates have spot and forward quotes
  - Subsamples of 62, 54, 40 and 10 currencies
- January 1971 – December 2019 (588 months)
  - Long sample period covers years with various interest rate regimes, business cycles, risk on/off periods, economic and currency crises
- Predictor Profits
  - Quintile spreads of equally-weighted averages of currency excess returns
  - Aggregate measures of currency predictors (e.g. Average Mispricing)

In-Sample/Out-of-Sample and Post-Publication Periods

End of Data Used In Academic Study

Research Publication

In-Sample Period of Academic Study

461 months

Out-of-Sample Period

11 months

Data Mining?

Post-Publication Period

117 months

Risk Premium? Mispricing?

Post-Publication Results

	Gross Profits	Net Profits
Post-Sample	0.038	0.120
	(0.233)	(0.233)
Post-Publication	–0.398***	–0.350***
	(0.110)	(0.110)
Null: Post-Publication = –1 x Average Predictor In-Sample Profits	0.140	0.065

No Evidence of Data Mining

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Mispricing, not Risk Premia

- Publication Effect is Smaller for Predictors that
  - are more costly to arbitrage
  - have restrictions to convertibility
- Inclusion of Potentially Risk-based Predictors Biases against Publication Effect

Publication Effects Robust to Controls for Time Trend, Risk Premia, and Predictor Persistence

	Gross Profits			
	(1)	(2)	(3)	(4)
Post-Publication	–0.466***	–0.389***	–0.356***	–0.329***
	(0.136)	(0.118)	(0.111)	(0.109)
Time	0.029			
	(0.046)			
Level of Interest Rates		Yes		
Exchange Rate Volatility		Yes		
NBER U.S. Business Cycle Contractions		Yes		
Crisis		Yes		
3 Currency Risk Factors			Yes	
8 Equity Market Risk Factors			Yes	
1- and 12-Months Predictor Profits				Yes

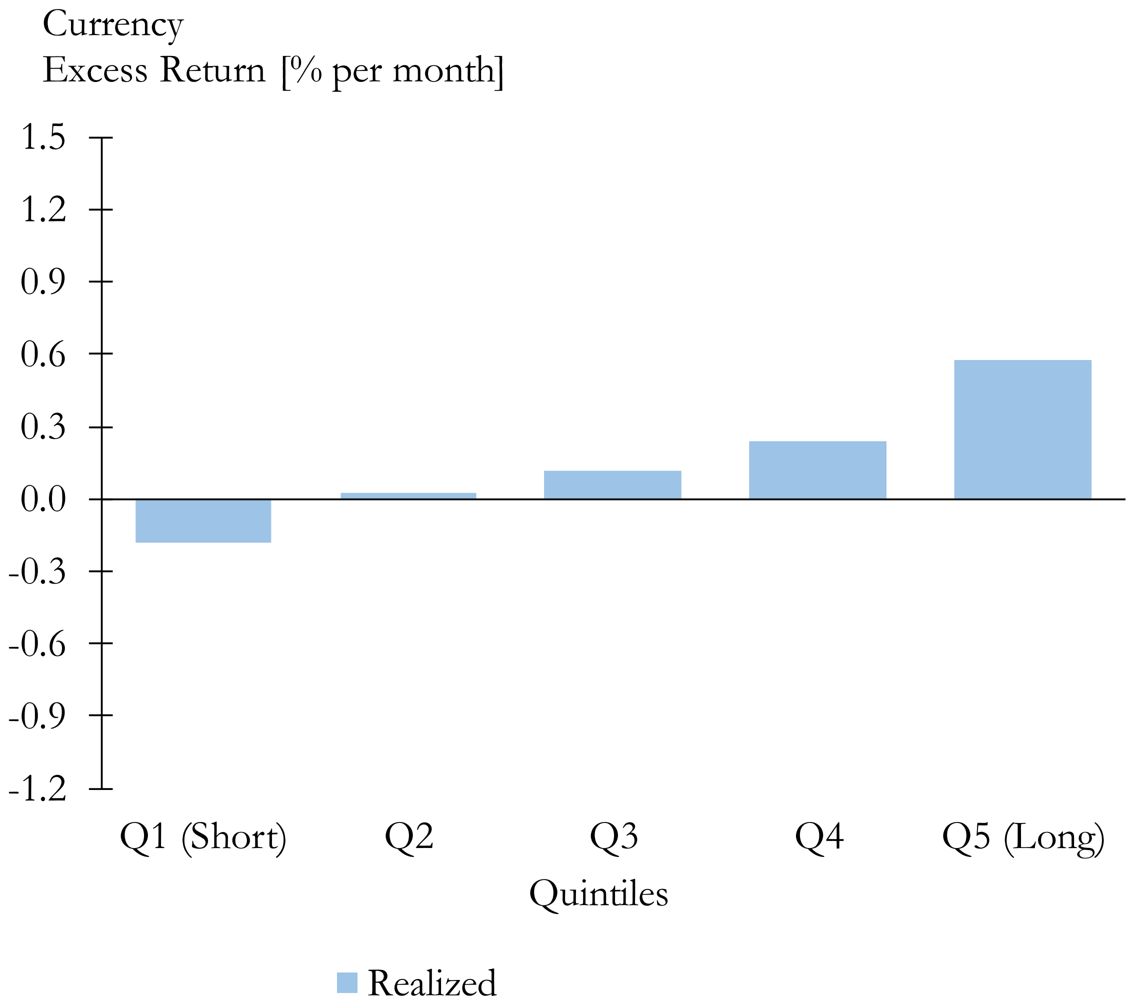
Publication Effects Robust to Controlling for Earlier Related Research

	Gross Profits	Net Profits
Post-Publication	–0.422***	–0.479***
	(0.122)	(0.122)
Academic Publications on Related FX Strategies	–0.262**	–0.095
	(0.133)	(0.133)
Practitioner Articles on FX Strategies	0.617***	0.676***
	(0.187)	(0.185)
Newspaper Articles on FX Strategies	–0.152	–0.116
	(0.150)	(0.149)
Academic Publications on Corresponding Equity Strategies	0.356**	0.414**
	(0.162)	(0.162)
Academic Publications on Corresponding Fixed Income Strategies	–0.014	0.032
	(0.169)	(0.168)

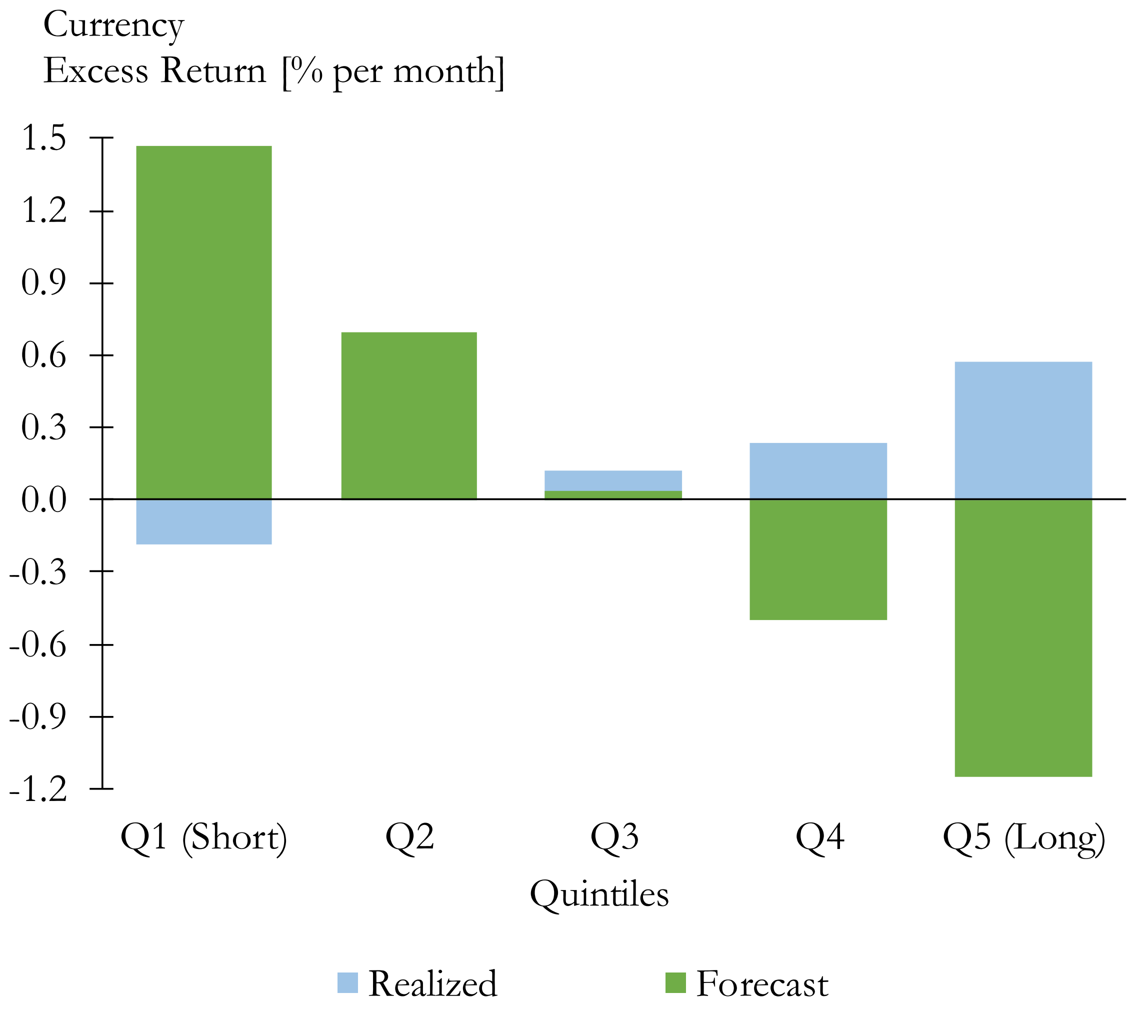
Trading Profits of Aggregate Mispricing

		Gross Profits		Net Profits	
		Q5–Q1	*t-stat*	Q5–Q1	*t-stat*
Realized Excess Returns		0.759	[6.37]	0.434	[3.65]
Time Series Factor Model Regressions	3-Factor Model	0.657	[4.93]	0.390	[2.94]
	11-Factor Model	0.631	[4.68]	0.374	[2.79]
Cross Sectional Fama-MacBeth Regressions	Unconstrained IPCA	0.588	[4.86]		
	Constrained IPCA	0.350	[2.56]		

Quintile Performance of Aggregate Mispricing



Analysts' Expectations Are Inconsistent with Aggregate Mispricing



Analysts Quickly Revise Their Forecasts Based on Lagged Mispricing

	(1)	(2)	(3)
Mispricing (lagged by 1 month)	2.358***		
	(0.244)		
Mispricing (lagged by 2 months)		0.598**	
		(0.242)	
Mispricing (lagged by 3 months)			–0.227
			(0.250)

- Forecasts change to reflect predictor information from prior two months
- The economic/statistical significance of two months < one month

Conclusion

- First Paper to Study Cross-Section of Currency Predictors
- Trading Strategies Seem To Reflect Mispricing
  - Profits decline substantially after strategies become publicly known
  - Publication effect greater for larger in-sample profits and lower arbitrage costs
  - Low persistence of currency ranks and strategy performance
  - Significant risk-adjusted strategy profits
- Analysts Do Not Seem to Exploit Currency Predictors
  - Analysts incorporate mispricing information only with a lag
  - Market participants contribute to mispricing when following analysts' forecasts
- Inefficiencies Exist, but Mispricing is Transitory