# Momentum Investment Strategies

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# Introduction

- Momentum strategies involve buying past winners and selling past losers
- Take a bet that past returns will continue - exploiting trends in exchange rate movements
- Implemented by going *long* on past winners and *short* past losers
- Long currencies with high past excess returns are termed *winners*
- Short currencies with low past excess returns are termed *losers*
- Formation period is the period used to determine whether a currency is a winner or loser
- Holding period is the length of time that the position is held before the trader closes out

# Introduction

- Literature documents the efficacy of momentum strategies across time periods, markets, and asset classes
- Returns from this strategy are difficult to explain by means of standard risk factors
- Strong positive average returns and Sharpe ratios of momentum strategies are punctuated with occasional *crashes*
- Returns are negatively skewed, and the negative returns can be pronounced and persistent
- Negative returns tend to occur in times of market stress
- However, over the long-term excess returns could be as large as 10% per annum
- Possible rationale for the abnormal returns are limits on arbitrage trading and market participants go through periods of systematic under-reaction and over-reaction

# Success of momentum strategies

- Extensive literature for momentum strategies in equity markets
- Possibly explained by:
  - exposure to risk
  - investor irrationality
- Looking to explain why equities that have performed well in the recent past continue to do so in the future

# Success of momentum strategies

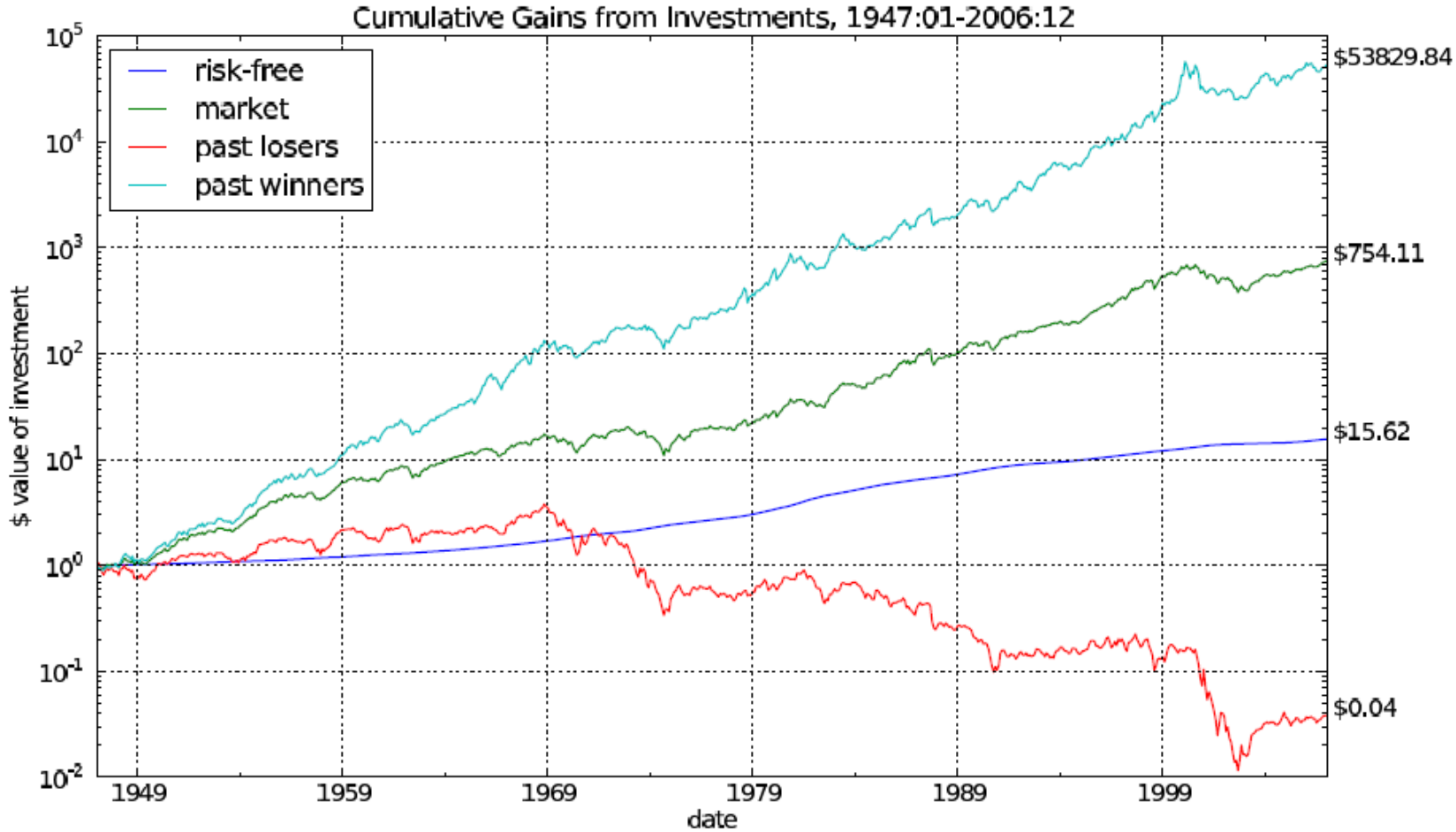


Figure 1: **Momentum Components, 1947-2006**

Over the the 60-year period from 1947:01 through 2006:12, we plot the cumulative returns for four assets: (1) the risk-free asset; (2) the CRSP value-weighted index; (3) the bottom decile "past loser" portfolio; and (4) the top decile "past winner" portfolio. On the right side of the plot, we present the final dollar values for each of the four portfolios, given a $1 investment in January, 1947

Figure: Momentum investment strategies (1947-2006)

# Success of momentum strategies

- After splitting the biggest winners and losers into deciles:
  - decile 1 represents the biggest losers
  - decile 10 represents the biggest winners
  - WML representing the zero-cost winners minus losers portfolio
- $\alpha$, $t(\alpha)$, and $\beta$ are estimated from a full-period regression
- $sk(m)$ denotes the full-period realized skewness of the monthly log returns
- $sk(d)$ denotes the full-period realized skewness of the daily log returns
- Note the difference in the Sharpe ratios!

# Success of momentum strategies

| | Momentum Decile Portfolios | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 4 | 7 | 10 | wml | Mkt |
| $r - rf$ | -2.5 | 6.4 | 9.2 | 15.3 | 17.9 | 7.7 |
| $\sigma$ | 36.5 | 23.2 | 19.5 | 23.7 | 30 | 18.8 |
| $\alpha$ | -14.7 | -2.1 | 1.8 | 7.5 | 22.2 | 0 |
| $t(\alpha)$ | (-6.7) | (-2.1) | -2.8 | -5.1 | -7.3 | 0 |
| $\beta$ | 1.61 | 1.13 | 0.98 | 1.03 | -0.58 | 1 |
| $SR$ | -0.07 | 0.28 | 0.47 | 0.65 | 0.6 | 0.41 |
| $sk(m)$ | 0.09 | 0.21 | -0.55 | -0.82 | -4.7 | -0.57 |
| $sk(d)$ | 0.12 | 0.27 | -0.44 | -0.61 | -1.18 | -0.44 |

Table: Momentum Portfolio Characteristics (1927m1-2013m3)

# Success of momentum strategies

## Foreign exchange market

- Most of the research on foreign exchange instruments suggest these strategies derive positive returns
- Menkhoff *et al.* (2012) use of a broad cross-section of 48 countries and data over 1976 - 2010
- Also able to control for transaction costs
- Suggest momentum returns in foreign exchange markets are similar to those in stock markets
- Use formation periods of between 1 and 12 months and holding periods of 1 month
- Shaded areas correspond to NBER recessions

# Success of momentum strategies

Menkhoff *et al.* (2012)

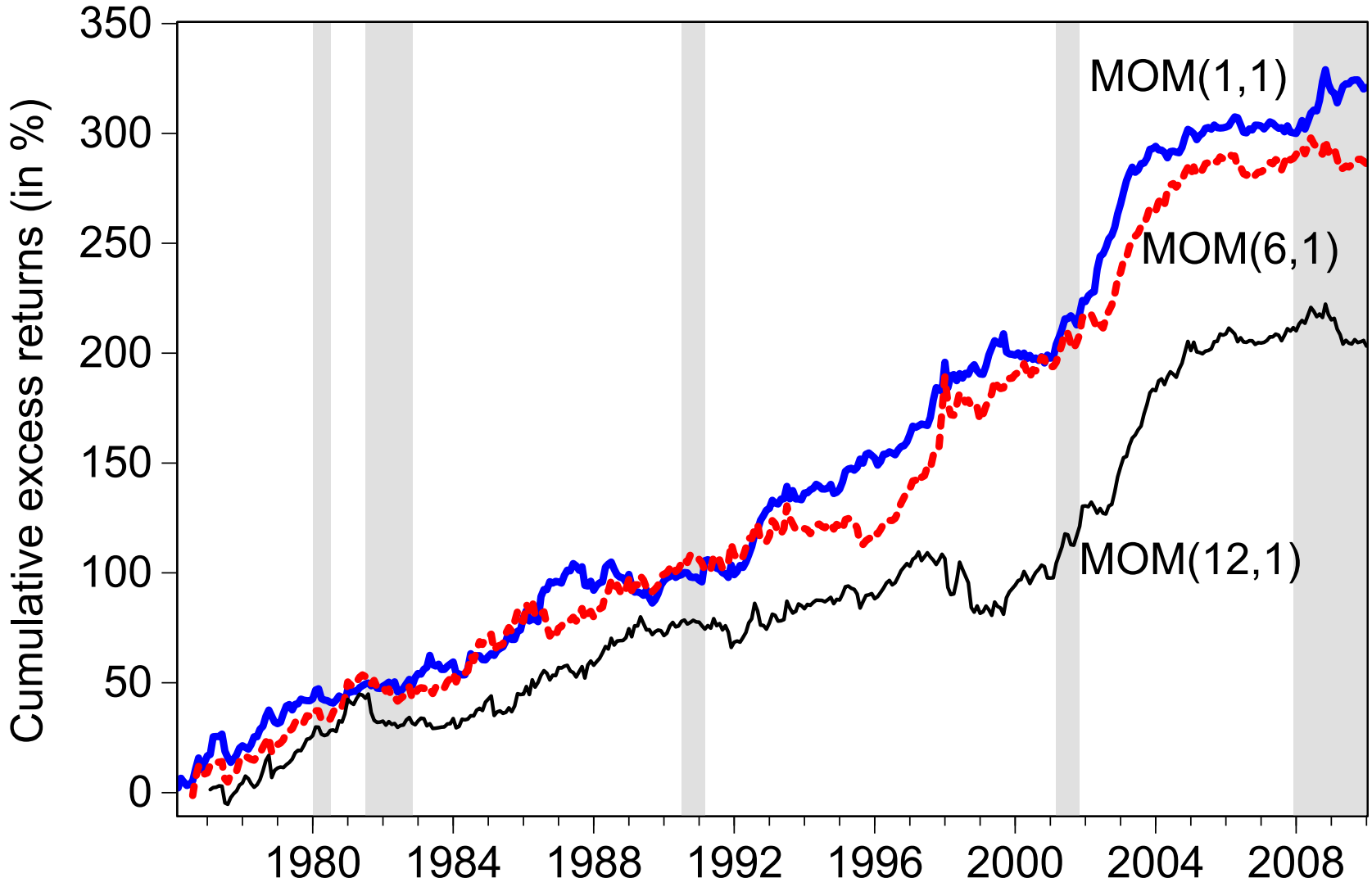


Figure: Momentum Returns in Foreign Exchange Market

# Success of momentum strategies

Burnside *et al.* (2012)

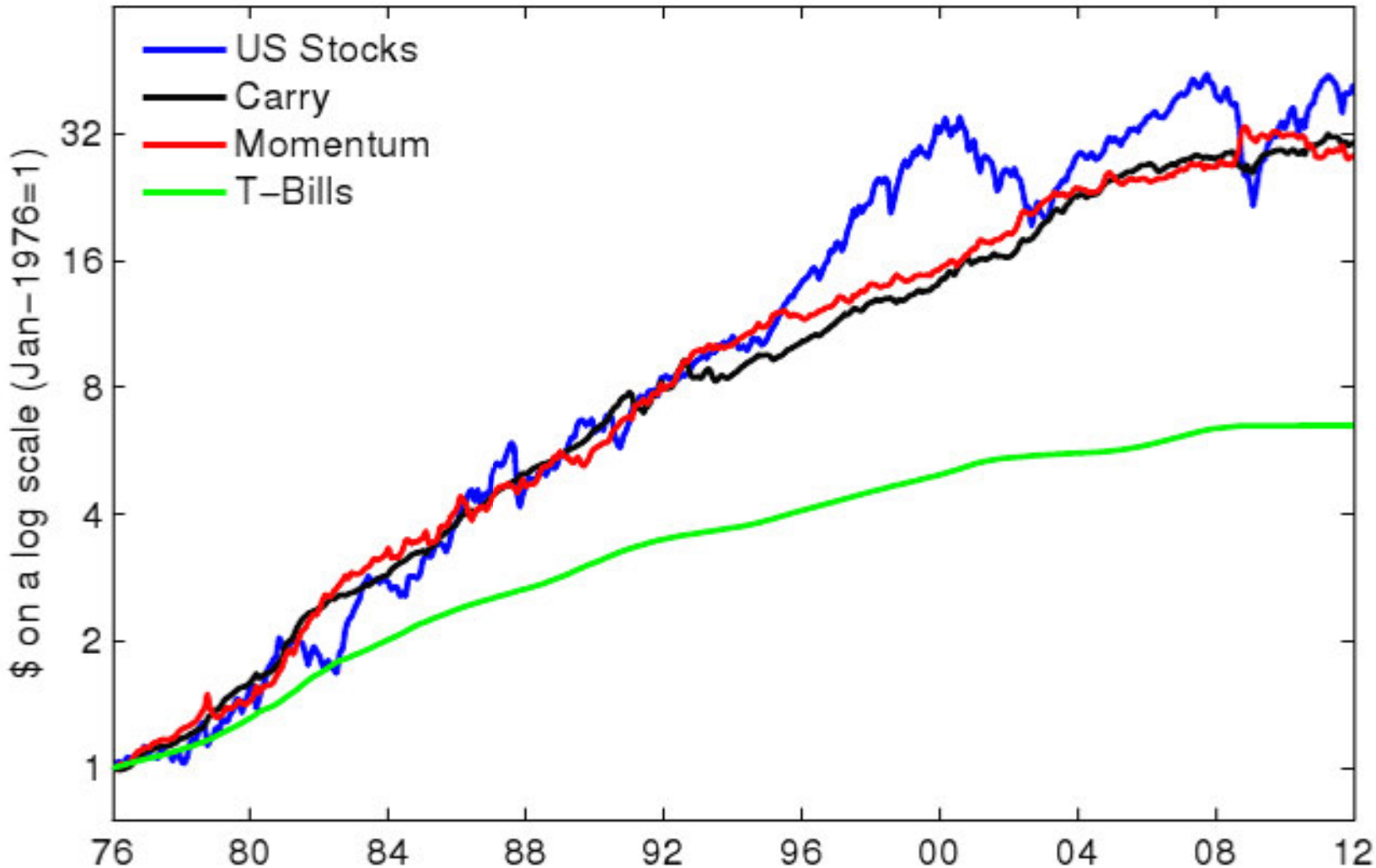


Figure: Currency Strategies in Foreign Exchange Market

# Success of momentum strategies

## Foreign exchange market

- Sharpe ratios of both carry trade and momentum currency strategies are substantially higher than that of the stock market
- Currency momentum returns are largely unrelated to the carry trade
- Also not correlated to the returns of stock-market
- There are obvious gains to using both currency-trading strategies simultaneously

# Explanations for high momentum returns

## Macroeconomic risk factors

- Returns from currency momentum strategies are not correlated with macroeconomic risk factors
- Menkhoff *et al.* (2012) make use of a number of simple bivariate linear regression models
- Explanatory variable pertains to measures of macroeconomic activity
- Coefficient of determination in each regression is almost zero

# Explanations for high momentum returns

Macroeconomic risk factors

| | MOM(1,1) | | | MOM(6,1) | | | MOM(12,1) | | |
|---|---|---|---|---|---|---|---|---|---|
| | $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ |
| Consumption | 9.65 | -0.05 | 0.00 | 8.95 | -0.12 | 0.00 | 6.03 | 0.07 | 0.00 |
| Employment | 10.57 | -0.72 | 0.00 | 7.74 | 0.62 | 0.00 | 5.86 | 0.23 | 0.00 |
| ISM | 9.46 | 0.04 | 0.00 | 8.60 | 0.03 | 0.00 | 6.14 | 0.04 | 0.00 |
| IP | 9.72 | 0.11 | 0.00 | 8.72 | 0.04 | 0.00 | 6.26 | 0.03 | 0.00 |
| CPI | 11.73 | -0.55 | 0.00 | 9.11 | -0.12 | 0.00 | 6.60 | -0.10 | 0.00 |
| M2 | 9.97 | 0.34 | 0.00 | 8.68 | 0.02 | 0.00 | 6.18 | -0.01 | 0.00 |
| DispInc | 9.33 | 0.07 | 0.00 | 8.42 | 0.10 | 0.00 | 5.95 | 0.10 | 0.00 |
| TED | 13.64 | -0.38 | 0.01 | 11.95 | -0.30 | 0.01 | 9.73 | -0.32 | 0.01 |
| Term | 4.48 | 0.22 | 0.01 | 7.54 | 0.05 | 0.00 | 5.05 | 0.05 | 0.00 |
| HMLFX | 9.50 | 0.04 | 0.00 | 8.65 | 0.02 | 0.00 | 6.21 | 0.08 | 0.00 |
| VOLFX | 11.70 | -0.44 | 0.00 | 18.75 | -2.04 | 0.01 | 27.59 | -4.29 | 0.04 |

Table: Regression Analysis for Macroeconomic Factors

# Explanations for high momentum returns

## Limits to arbitrage

- Menkhoff *et al.* (2012) find that adjusting for transaction costs reduces the profits
- Down from an excess return of 10% p.a. to 7% p.a.
- Still able to derive a relatively large return from these strategies
- Hence, transaction costs are not the sole reason for the results

# Explanations for high momentum returns

## Slow information processing

- Momentum profits could be due to an initial *under-reaction* to news
- Normally followed by a subsequent *overreaction* to changes in observed market activity
- Suggest that the market may be relatively slow at processing this information
- Menkhoff *et al.* (2012) plot cumulative post-formation excess returns
- Clear pattern of increasing returns that peaks after 8-12 months
- Subsequent period of declining excess returns - more pronounced for longer formation periods
- Suggests prices of foreign exchange instruments are similar to other financial assets

# Success of momentum strategies

Menkhoff *et al.* (2012)

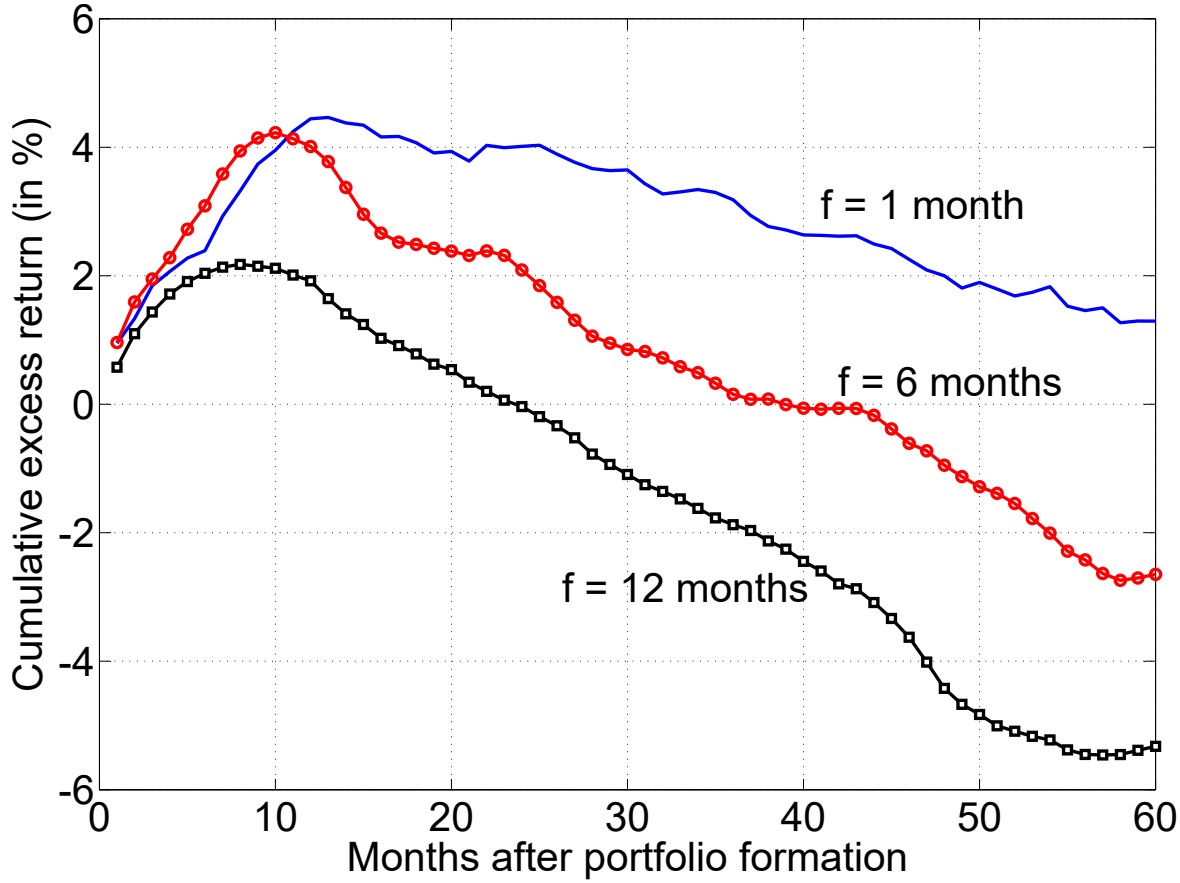


Figure: Momentum Returns Information Processing

# Conclusion

- No clear, unified explanation for the excess returns from currency momentum strategies
- Comparable in magnitude to the excess returns documented in stock markets
- Occur despite the characteristics of currency markets (i.e. huge trading volumes, etc.)
- Evidence for initial under-reaction and subsequent over-reaction
- Could possibly be attributed to the time variation in momentum profitability, high volatility and exposure to country risks
- However, it is difficult to quantify many of these factors
- Then finally, carry trades and momentum trades can influence exchange rates so research relating to these strategies is valuable