Anomaly Time

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The Anomaly Zoo

There are now over 400 documented anomalies...[1]

- McLean and Pontiff (2016) – 93
- Kakushadze and Serur (2018) – 151 (18 asset classes)
- Hou et al. (2020) – 452

... all apparent violations of market efficiency.

The interpretation of these anomalies (and all anomalies in general) remains the source of much disagreement.

[1] In this sense, an "anomaly" refers to the idea that firm-level characteristics can predict future stock returns.

Several Interpretations

Anomalies were once real or maybe they never existed

McLean and Pontiff (2016)

- Anomalies are "real" ... but arbitrageurs eliminated them.

Harvey et al. (2016) & Hou et al. (2020)

- Anomalies are not "real" ... but are spurious correlations found through data mining.
- *"... most claimed research findings in financial economics are likely false."*

Anomalies exist and can be explained

Lakonishok et al. (1994)

- Rationalize the sales growth anomaly by positing that "market participants appear to have consistently overestimated future growth rates..."

Cooper et al. (2008), Sloan (1996), and Novy-Marx (2013) and many (most?) original anomaly papers.

- The authors that first document an anomaly tend to argue for explanations based on some combination of over- or under-reaction, overconfidence, limited attention, or limits to arbitrage.

Jensen et al. (2021).

Our Contribution

The academic description of our contribution

We update a decades-old convention in the anomalies literature and use our new technique to learn something about anomalies.

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[3] Chen and Velikov (2019), Engelberg et al. (2018), and McLean and Pontiff (2016)

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- Anomaly returns are highest immediately following information releases.
- In recent years, many anomalies do not generate returns using FF92.
- Event-time anomaly returns remain strong even when controlling for transaction costs, news days, and publication dates.[3]

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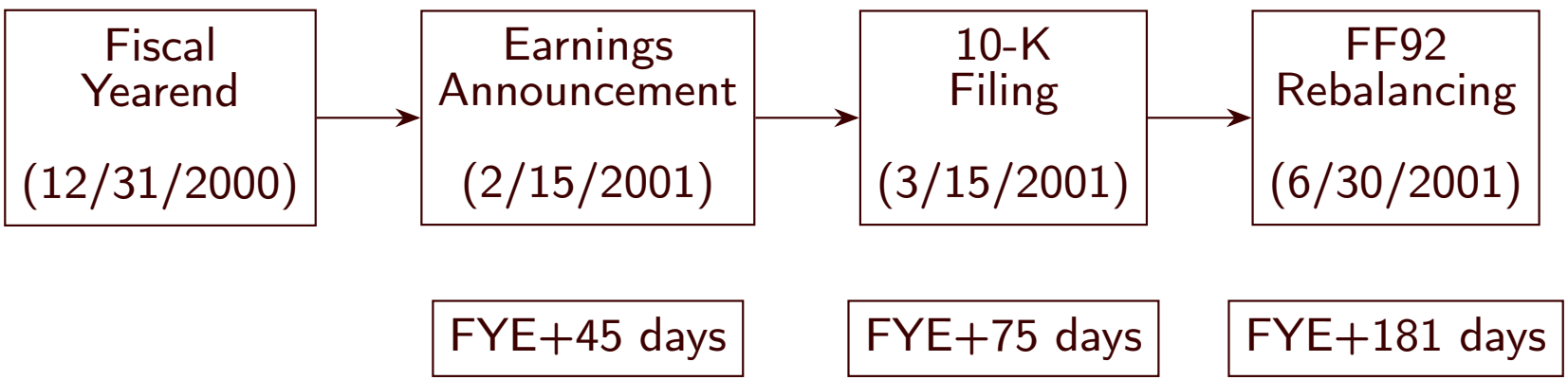
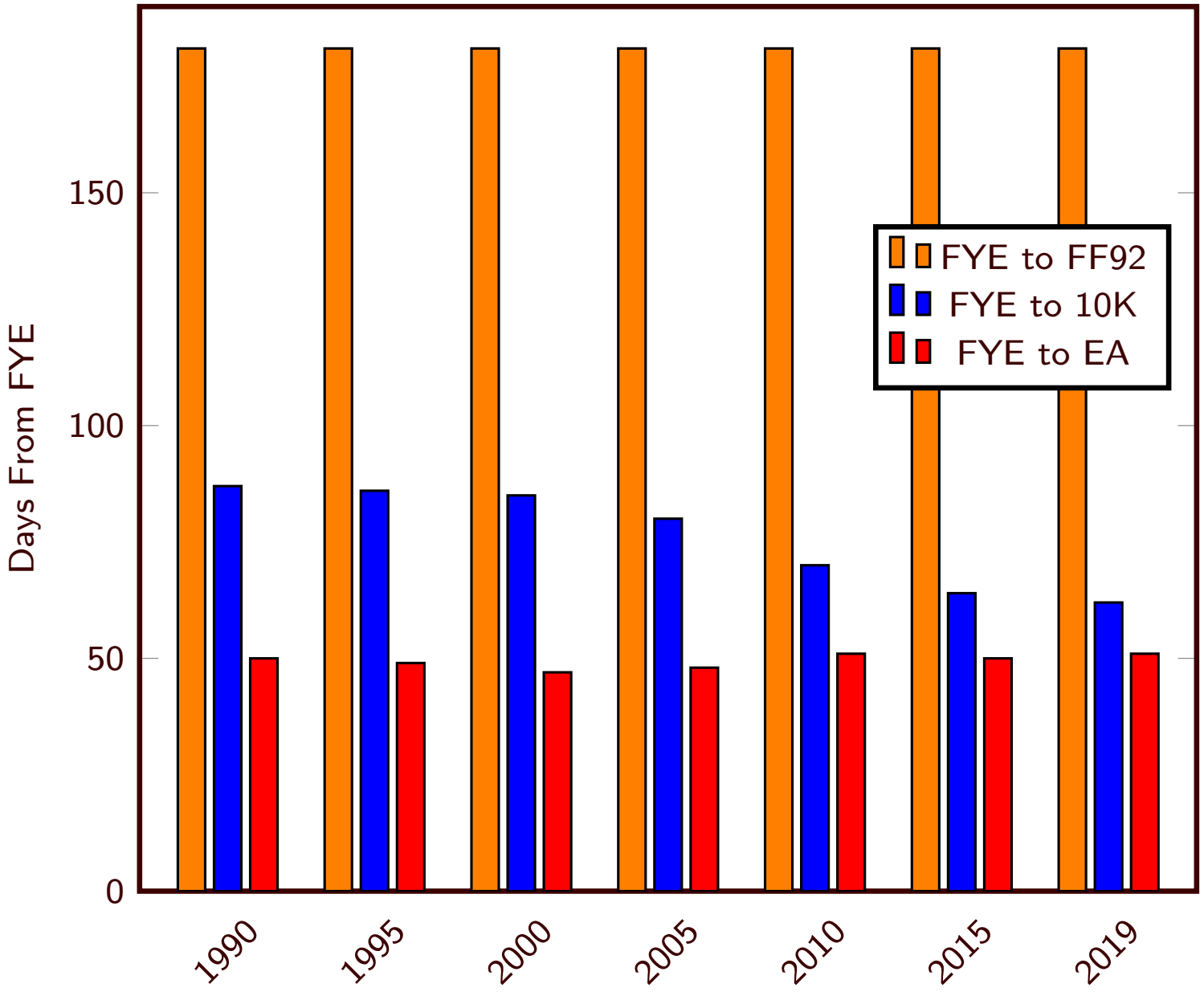
Timing of Information Releases

First... let's focus on accounting information.

- Information revealed on income statements and balance sheets (e.g., assets, accruals, inventory, earnings, and cost of goods sold).
- Many anomalies are at least in part constructed using accounting information. **Thus, it is important to know *when* this information is released**.

Second... let's consider the timeline of accounting information and conventional anomaly portfolio rebalancing.




Days From FYE
0
50
100
150
1990
1995
2000
2005
2010
2015
2019
FYE to FF92
FYE to 10K
FYE to EA

Two Trends and Their Consequence

1 – 10-K filings are released nearer to earnings announcements in recent years.

- The lag has dropped from a month to less than a week.

2 – Earnings announcements now contain much more information than just earnings.

- Between 2005 and 2010 there was a large shift as firms began including full balance sheets and income statements with their earnings release.

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Given these trends, accounting information is released much nearer the FYE in recent years.

- In contrast, the FF92 rebalancing date still comes 6 months after FYE.
- **However, it is unclear whether certain financial information is released on the earnings announcement date or the 10-K filing date.**

Compustat Snapshot Database

Compustat Snapshot North America User Guide

The Snapshot database creates a historical investment environment by showing the information that was available at that time in history.

Snapshot tells us the *effective date* upon which financial information was released.

- We can see if accruals was released with the 10-K filing or with the earnings announcement.

The earliest date where we know all the new information to calculate the anomaly variable is called the **Information Release Date (Info)**.

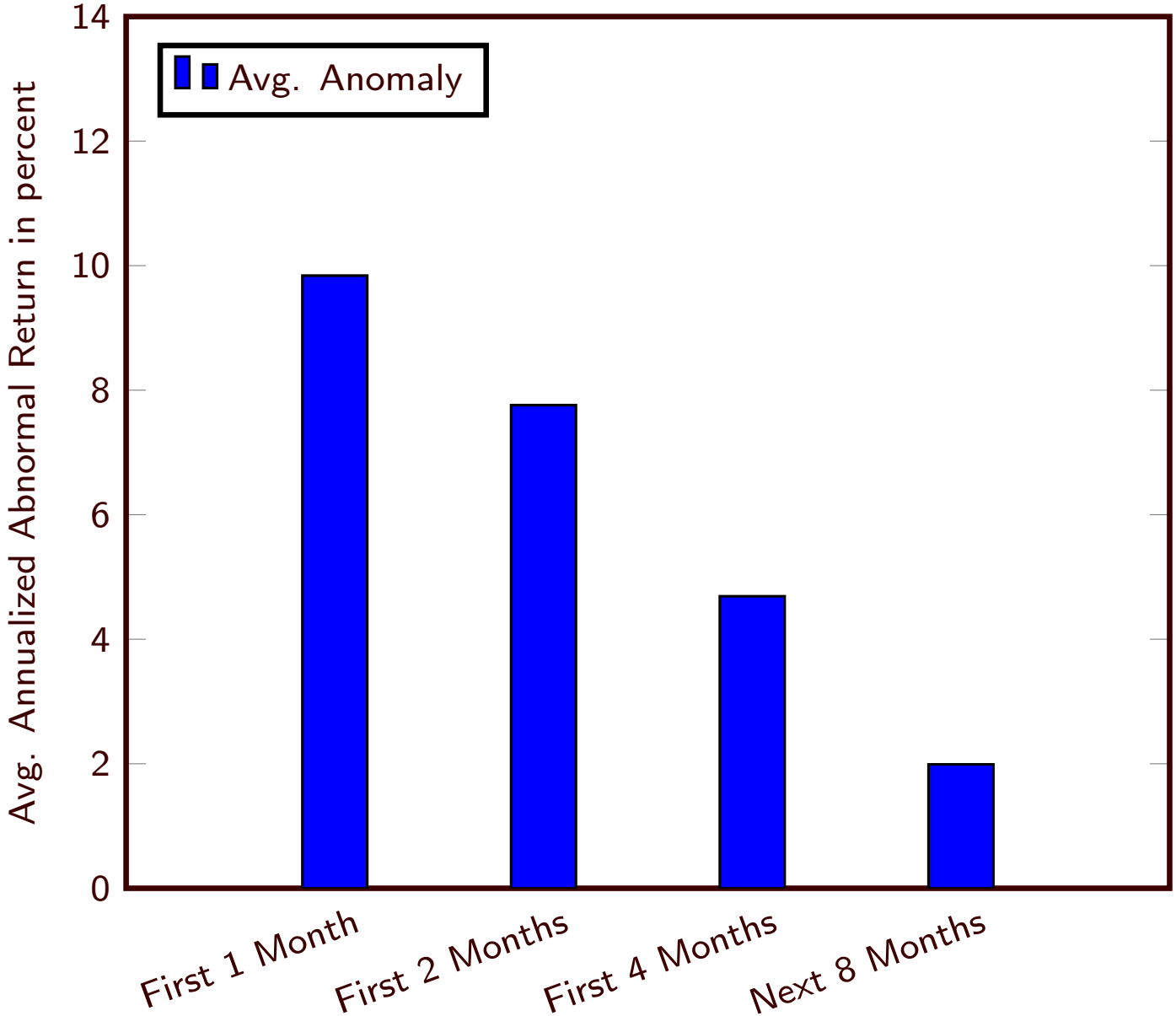
- For Asset Turnover, which requires sales and NOA, the information release date could be the 10-K date if balance sheet information wasn't released until the 10-K, or it could be the earnings announcement date.

Technique

1. Identify a set of anomalies where we can use Snapshot to clearly identify information release dates.
   - Start with anomalies examined by McLean and Pontiff (2016) . . . 97
   - Focus on subsets of "fundamental" and "event" anomalies 60
   - Limit to anomalies that can be replicated with Snapshot **28**
     - Asset Turnover ✓ Earnings-to-Price ✗
2. For each of the 28 anomalies, use Snapshot to identify the information release date.
3. Construct long-short anomaly portfolios taking special care to trade on fresh information.
   1. Study returns relative to information release dates (Event Time).
   2. Study returns from Info versus FF92 rebalancing strategies (Calendar Time).

Results

Event-Time Returns



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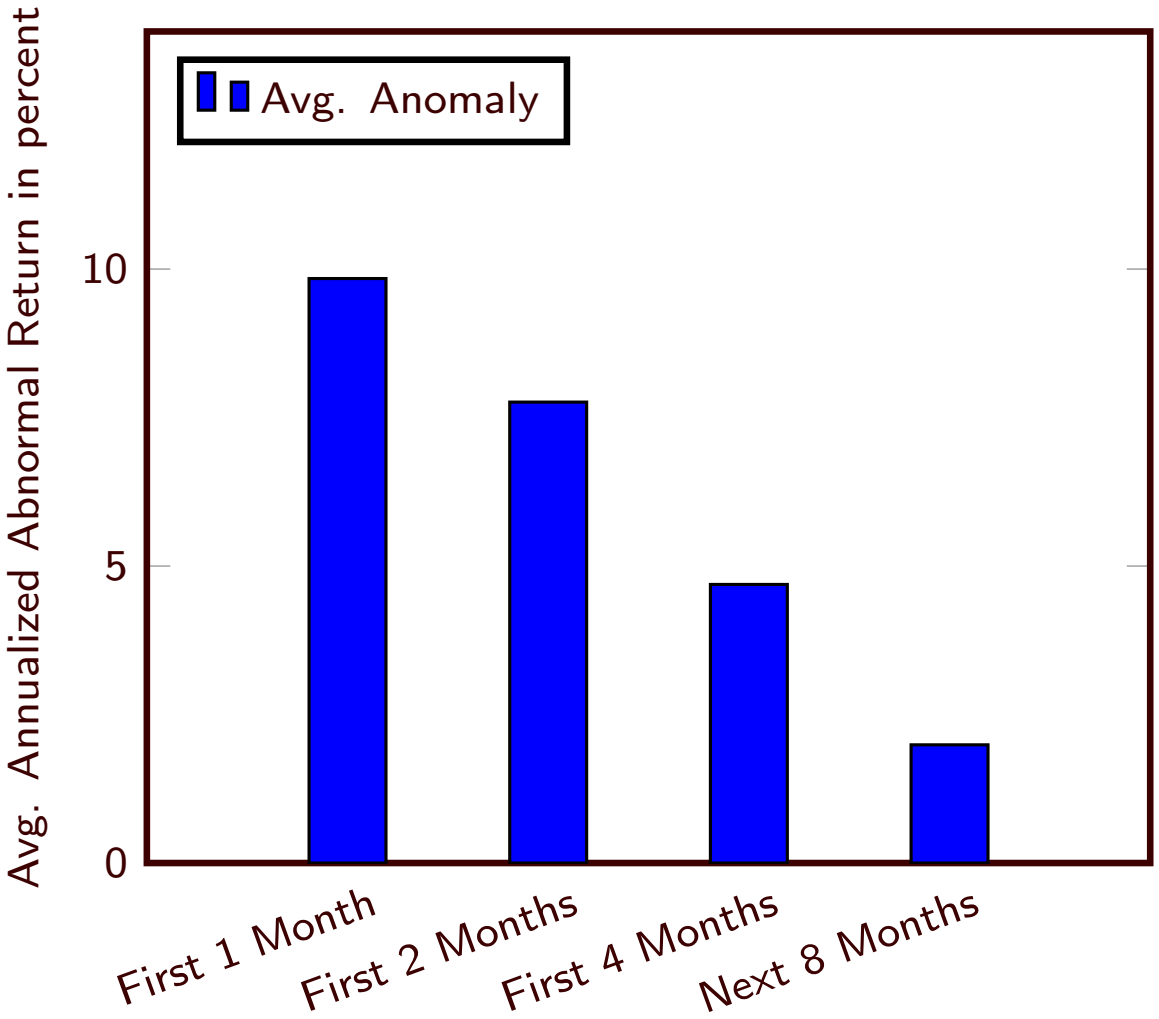
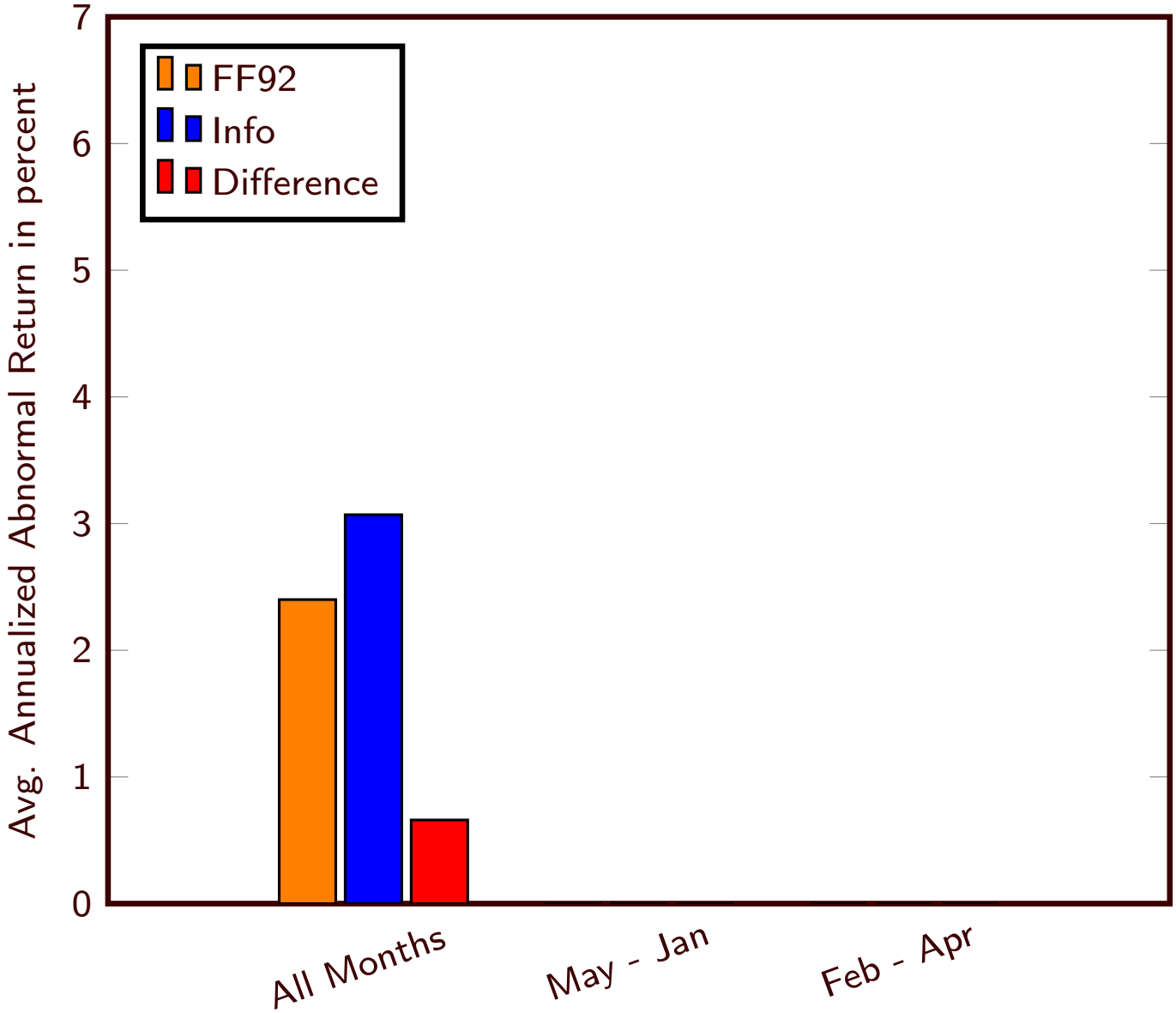
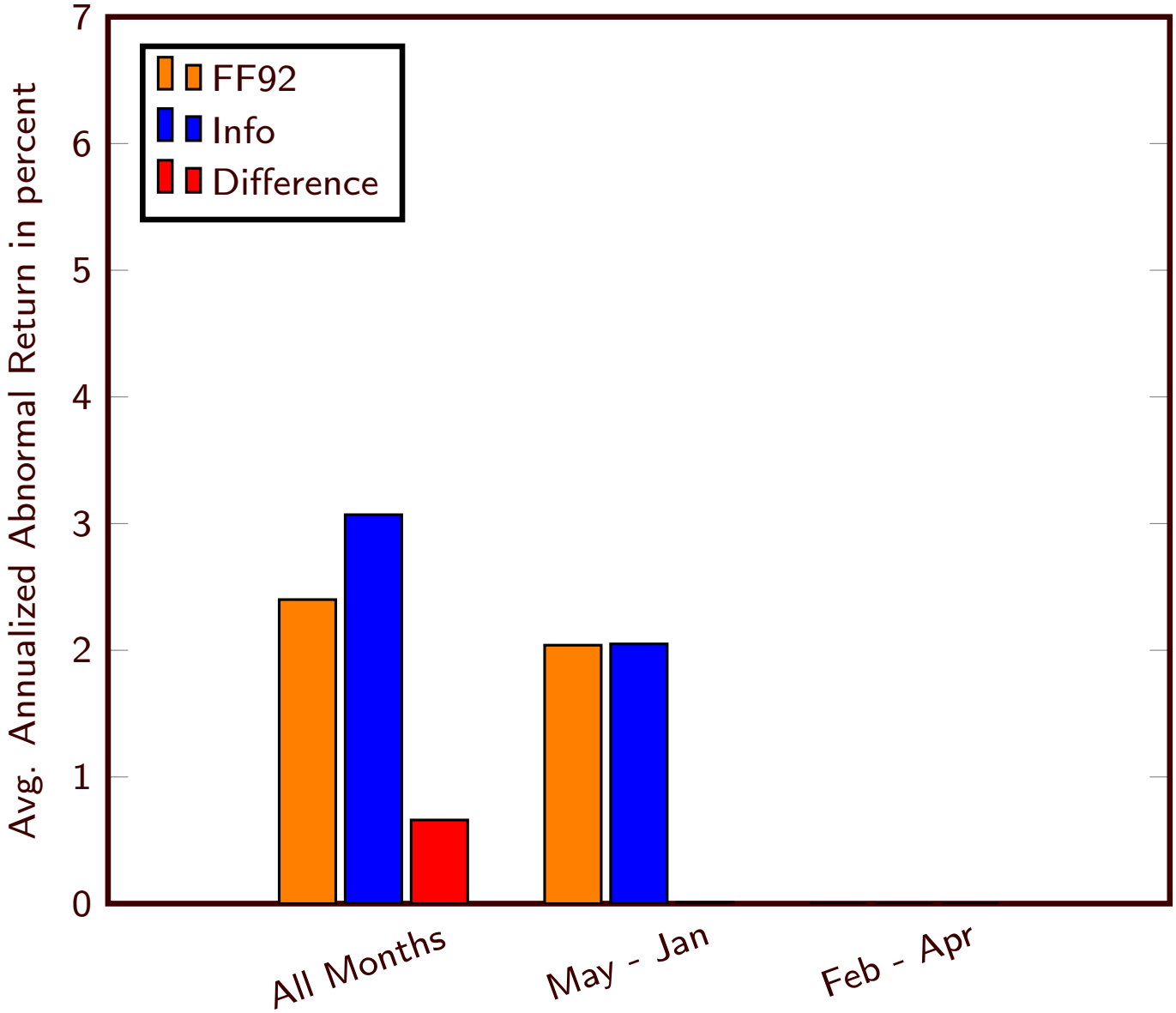


Anomaly returns are highly concentrated in the weeks immediately following information releases.

Calendar-Time Returns



Calendar-Time Returns



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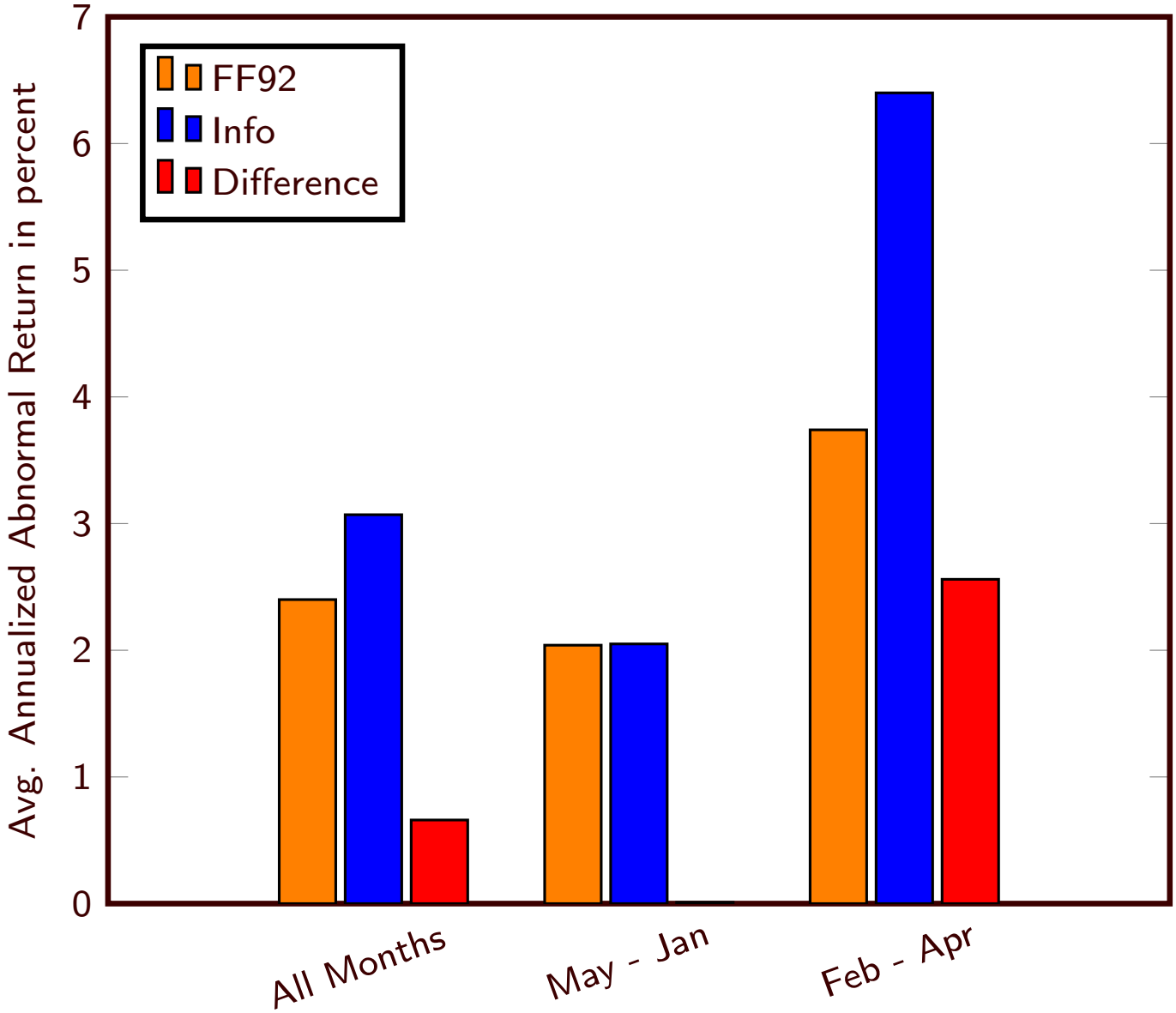

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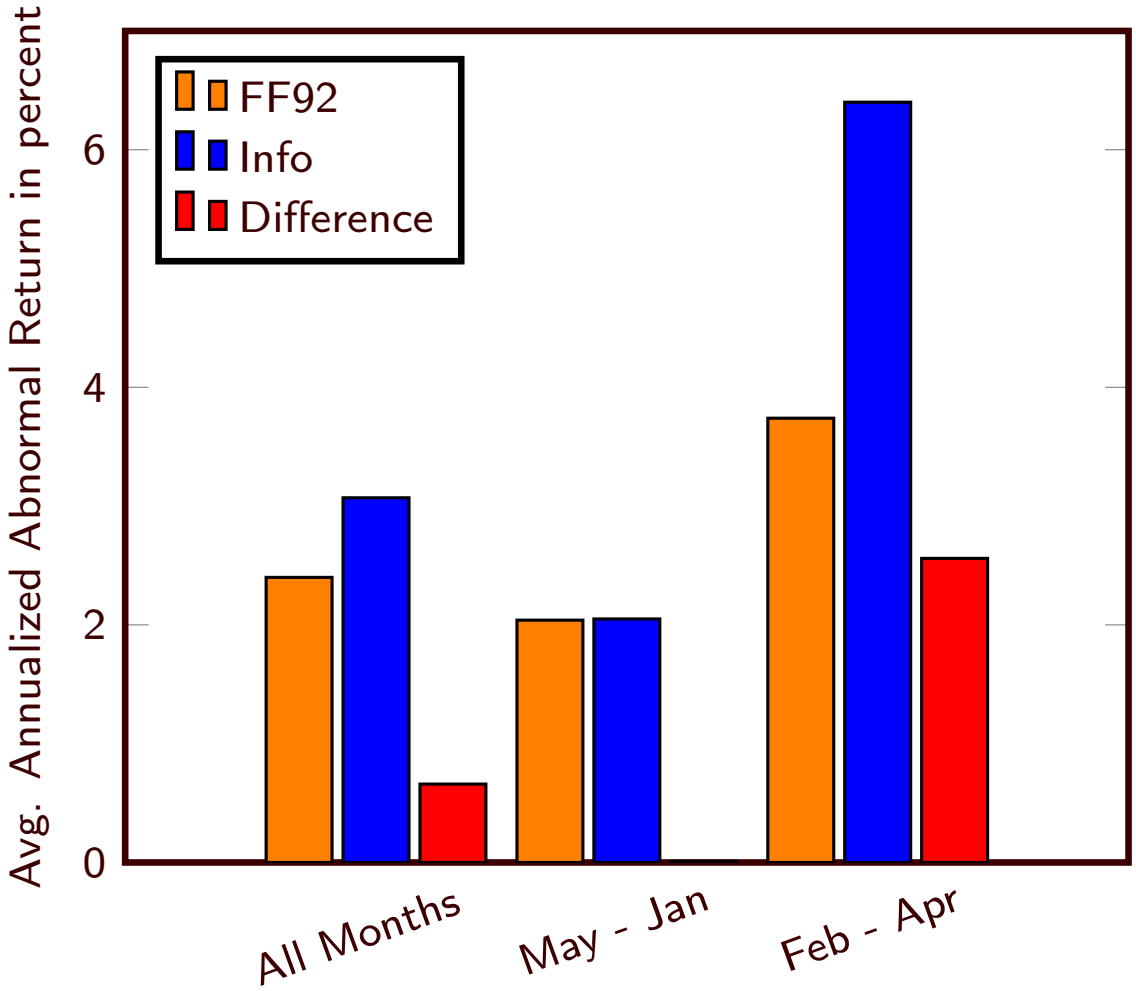
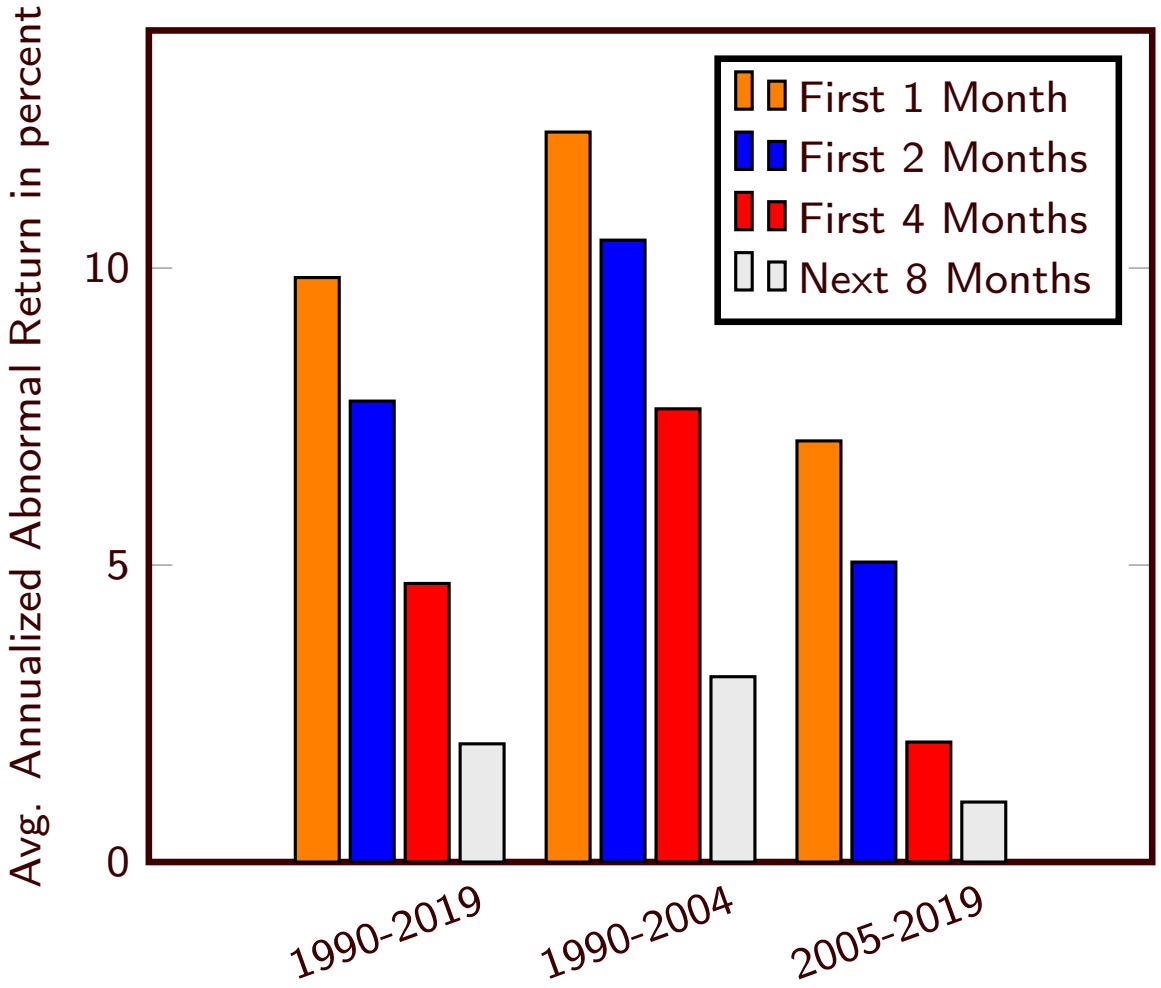


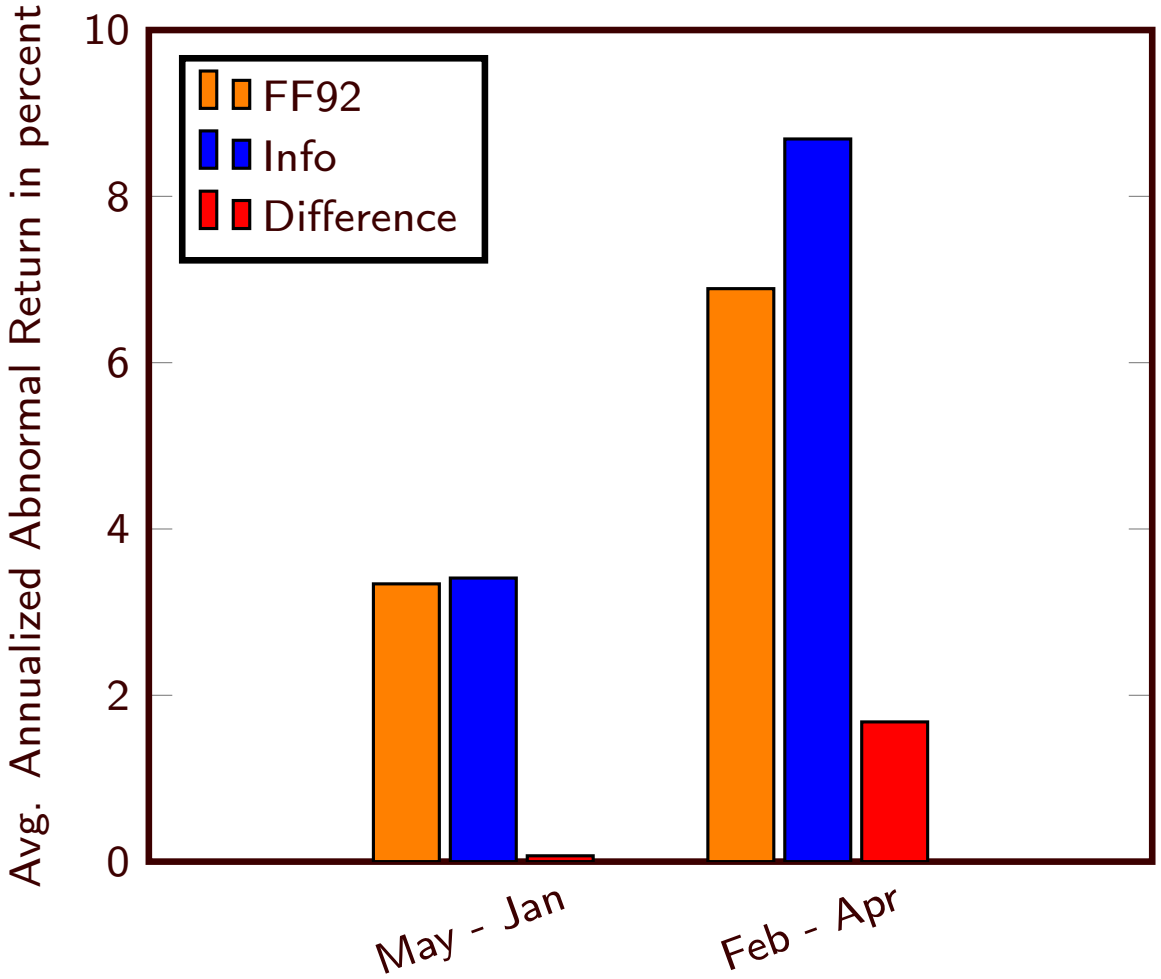
Anomaly returns are concentrated in months when new financial information arrives.

Event-Time – Trends



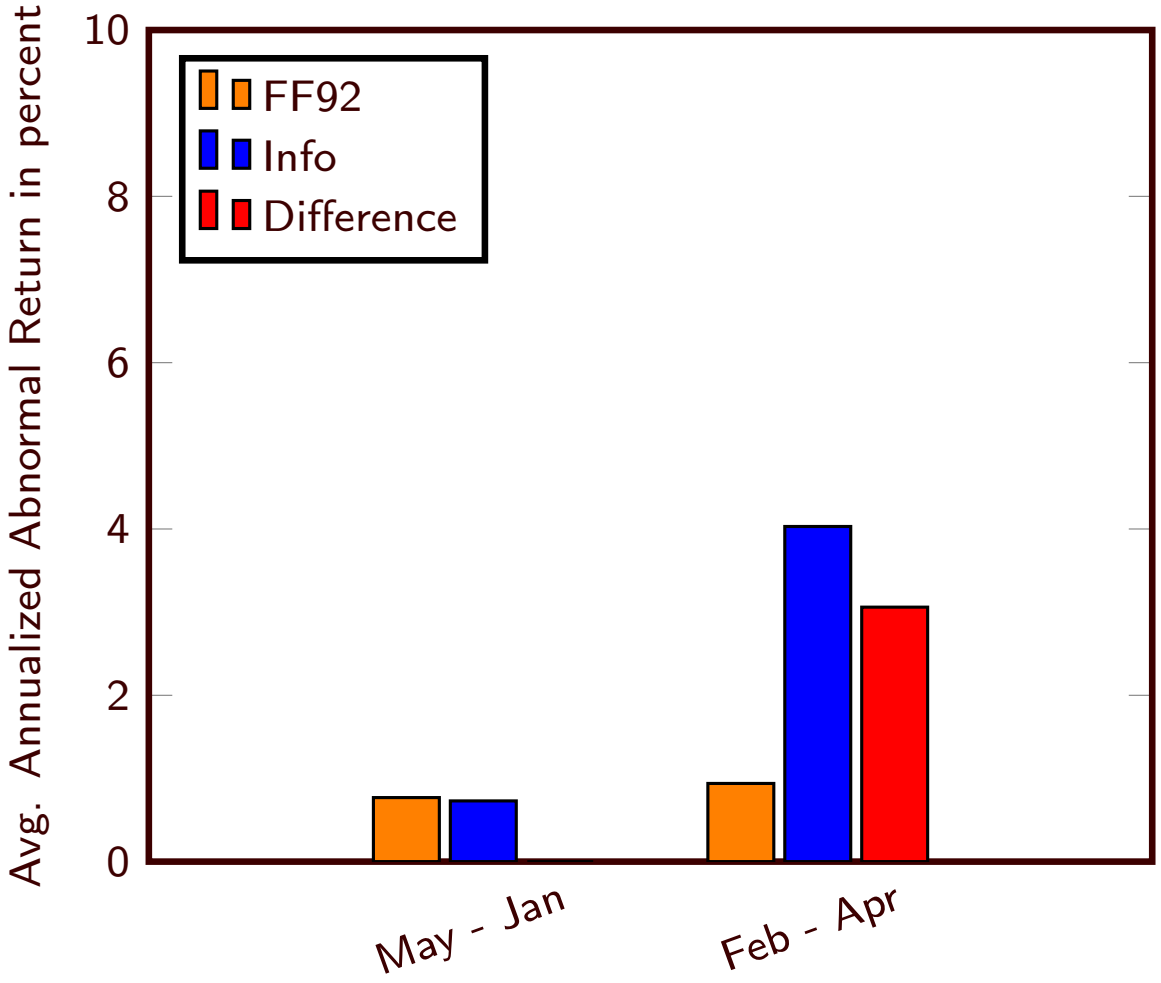
Returns have diminished over time, but are still high (and more concentrated) in the early weeks.

Calendar-Time – Trends



1990-2004: Both FF92 and Info generated similar returns, and do so even when information isn't new.

Calendar-Time – Trends



2005-2019: FF92 fails to generate returns, while Info yields high, reliable returns in the months with new information.

Quick Recap

Anomaly returns are highly concentrated in the weeks immediately following information releases.

Updating quickly when new information is released (Info rebalancing) is far superior to waiting (FF92 rebalancing).

Recall: Info rebalancing captures the returns from early weeks while FF92 misses them completely.

Returns have become more concentrated in recent years and Info rebalancing continues to produce returns in periods when new information is released.

Other Results

Trading costs don't eliminate returns, especially in the recent period where returns have remained high and bid-ask spreads have decreased.

Returns in February through April are nearly identical for *News Days* and *Non-News Days*.

The return profile looks the same whether we focus on the years pre- or post-publication dates.

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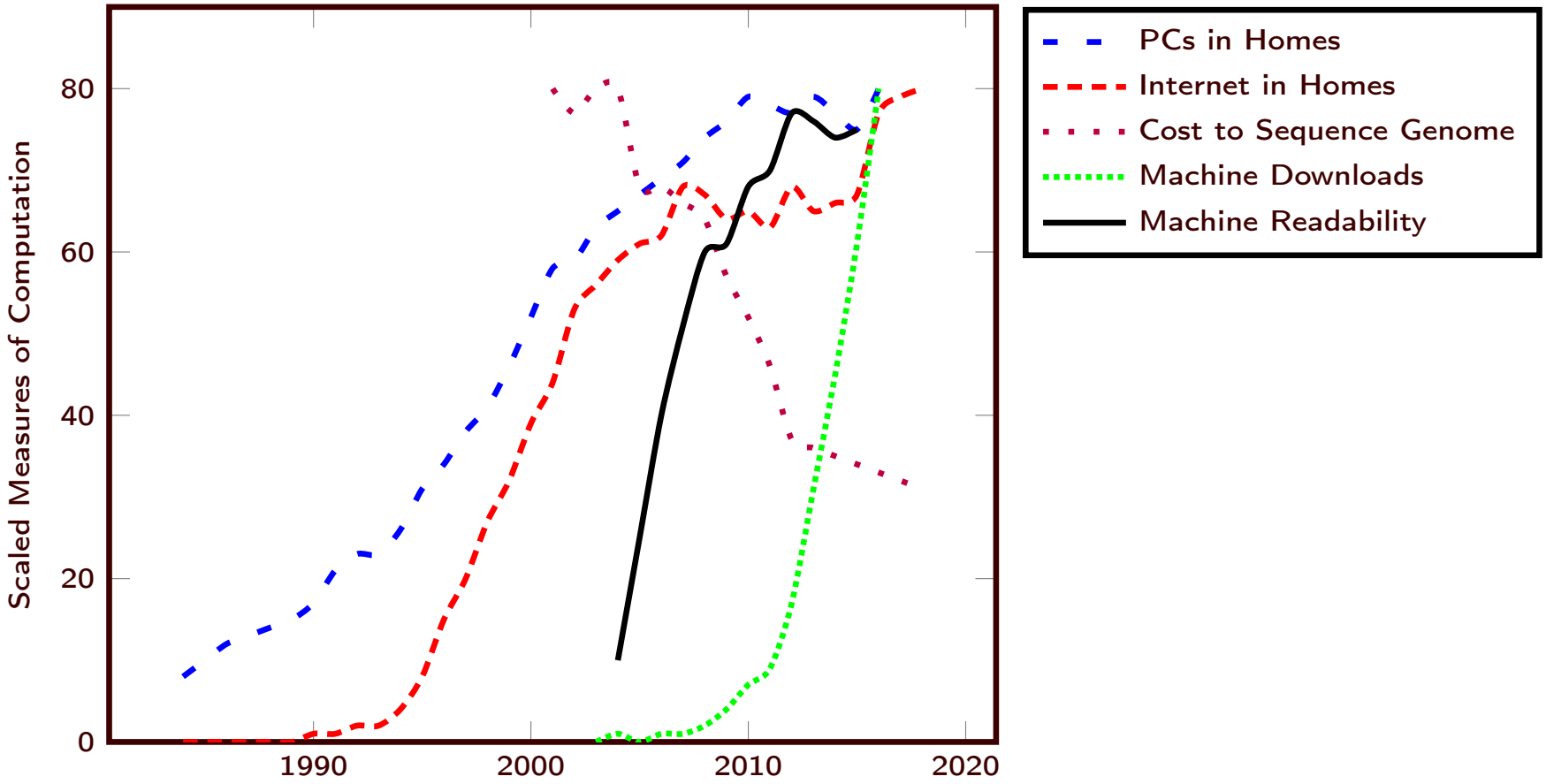
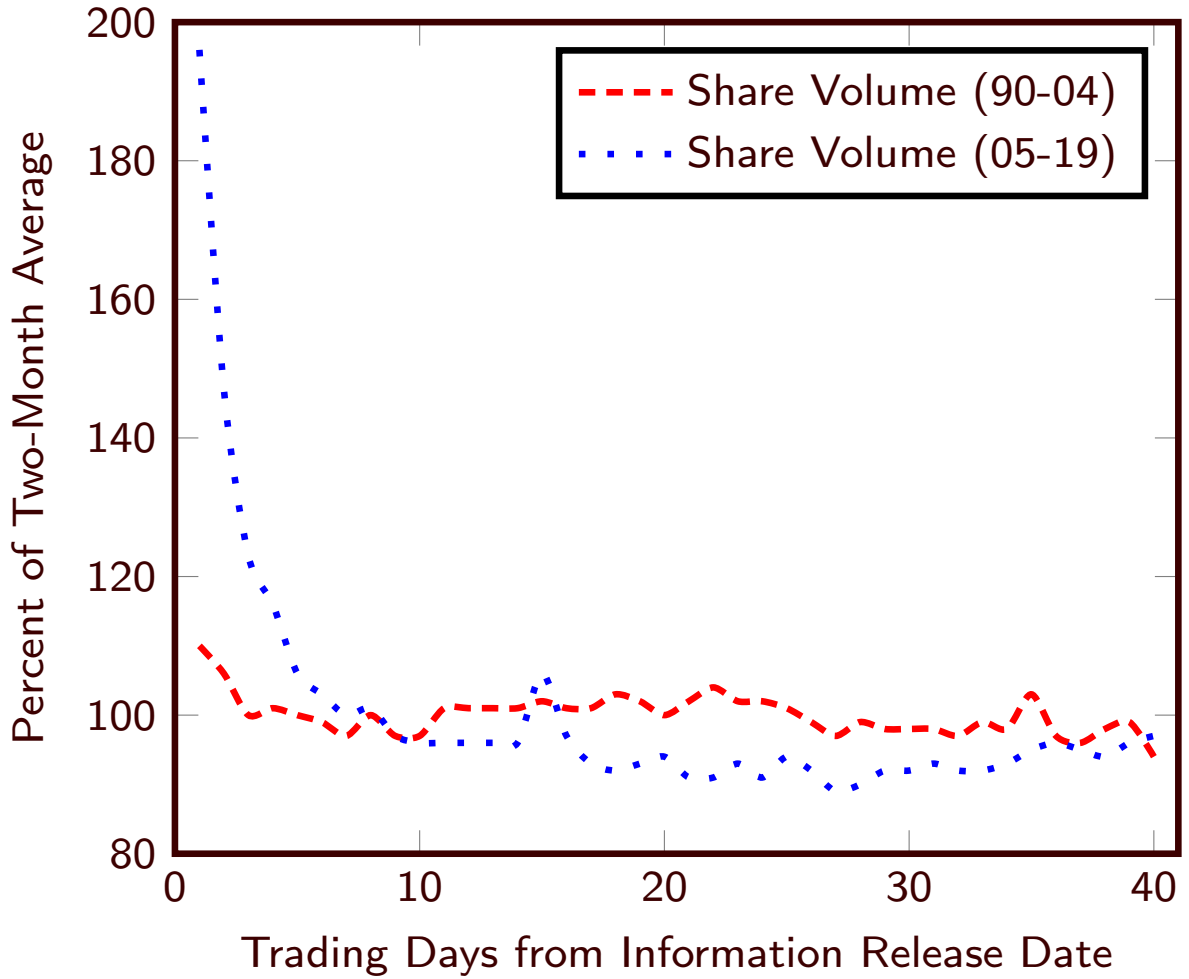
Our results suggest that anomalies are – at least in part – the result of **costly signal processing**.

Technology availability has gone up and costs have gone down...



... while investors are trading faster.



Much more volume close to the information release dates in more recent years.

EDGAR Implementation was a staggered shock to information processing costs.

Anomaly Returns Pre- and Post-EDGAR Implementation (Event-time Framework)

(1)	(2)	(3)	(4)	(5)	(6)
	Compound Returns Earned After Information Release			Percent of 4 Month Return Earned Over Span of	
Period	1 Month	2 Months	4 Months	1 Month	2 Months
Pre-EDGAR	0.66*	1.34***	3.13***	21	43
(s.e.)	(0.28)	(0.43)	(0.67)		
Post-EDGAR	0.98***	2.01***	2.38***	41	85
(s.e.)	(0.25)	(0.40)	(0.60)		

Returns are lower and more concentrated post-EDGAR than they were pre-EDGAR.

Summary and Recommendation

Anomaly returns are primarily earned in the weeks immediately following important information releases.

- The conventional portfolio rebalancing method (FF92) misses these high returns.

Anomaly returns exist in recent years, investors (and researchers) just have to act fast to capture them.

- The conventional portfolio rebalancing method (FF92) is not fast enough.

The profile of event-time anomaly returns – and trends in the profile – suggest that anomalies are at least in part the result of costly signal processing.

RECOMMENDATION: Researchers should identify information release dates using Snapshot. If Snapshot is unavailable, researchers should use the 10-K filing date, which is a fine compromise.