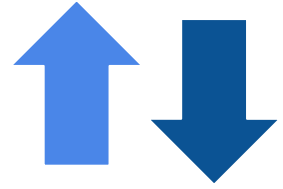# Cryptocurrency Pump-and-Dump Schemes

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Presented by Nyasha Chigwaja

What are P&Ds?

- P&D is a form of price manipulation that involves **artificially inflating** an asset price before selling the cheaply purchased assets at a higher price.

- These schemes are often organized using **encrypted messaging apps** such as Telegram.

- "Pump groups" use **social media platforms** to attract investors.

Aim of the paper

- To provide evidence of P&Ds detrimental effects

- Provide explanation on why 'outsiders' are willing to participate

Summary

- P&Ds move token price & volume significantly

- Investor performance depends on when they obtain signals

- Returns are positive up to 20 seconds after announcement

- Bans have been ineffective as many exchanges exist

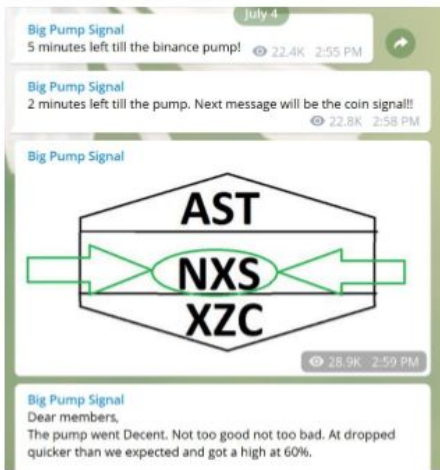- Participation possibly driven by gambling tendencies or overconfidence

Crypto vs. Stock market P&Ds

Duration	Minutes	Can take months
Information release	None	Release of false info
Regulation	Weak to none	SEC regulated - Illegal
Identification	Easy (Pump groups)	Difficult

A typical pump broadcast

1. The time at which Pump will happen.

2. Some propaganda about the group.

3. Encouragement to share the name of the chosen coin on social media.

Research Methodology

1 **2** **3** **4**
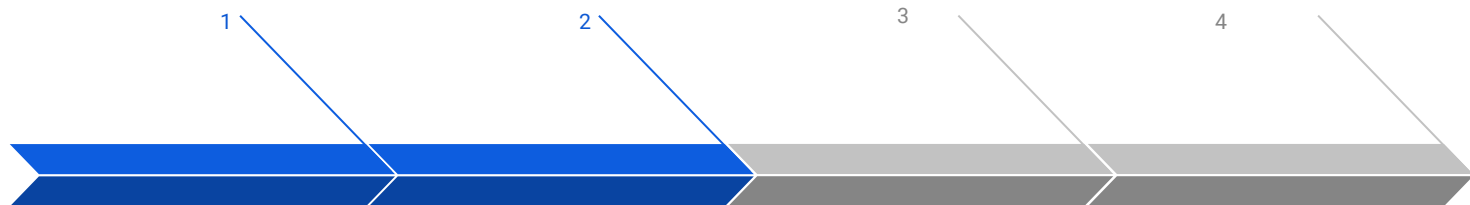
Identify P&D groups

List of P&D groups collected from Reddit & BitCoinTalk

Internet search for additional groups

Identify tokens

Read all messages in P&D groups to obtain:
- Token name
- Target exchange
- Target time
- Number of message viewers

Restrictions

Only tokens traded at least once in the period from 37 - 8 days before the P&D announcement

Only P&Ds from active channels

Exchange trading data

Free Binance API

Yobit & Bittrex data purchased from Kaiko

Additional trade data for cross-listed tokens from CoinMarketCap

Summary statistics

Characteristics of P&D events 15 May 2017 - 26 Aug 2018

Event-level	All (N=500)		Binance (N=76)		Bittrex (N=263)		Yobit (N=161)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Earliest channel's delay time (seconds)	21.7	4	20.1	5	14.0	4	34.9	3
Average delay time (seconds)	24.5	5.2	31.2	8	14.3	4.5	38.0	5.5
Average number of channels	1.58	1	1.42	1	1.08	1	2.45	1
Total number of viewers	5,941.5	2,094	22,445.0	3,049	3,887.1	2,382	1,507.0	1,038
Average number of viewers per channel	4,295.6	1,633	13,915.1	2,973	3,649.7	2,373	787.8	523.5

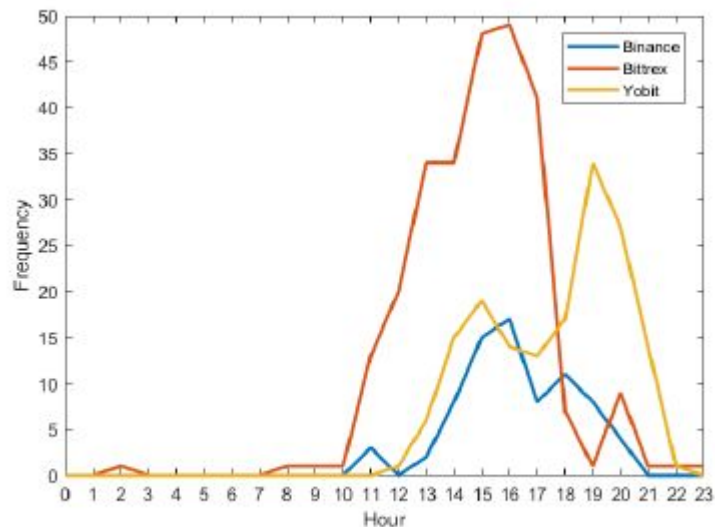| Channel-level	All (N=788)		Binance (N=108)		Bittrex (N=285)		Yobit (N=395)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Target return	211.5%	200%	69.0%	51.2%	246.9%	100%	233.0%	200%
Regular scheduled time	89.5%	100%	86.1%	100%	84.2%	100%	94.2%	100%

Definitions:
- Earliest channel's delay time = Earliest announcement - actual pump time
- Target return := pre-specified return before a P&D announcement
- Regular scheduled time := 1 if a channel's P&D announcement is scheduled at the regular pump time and 0 otherwise
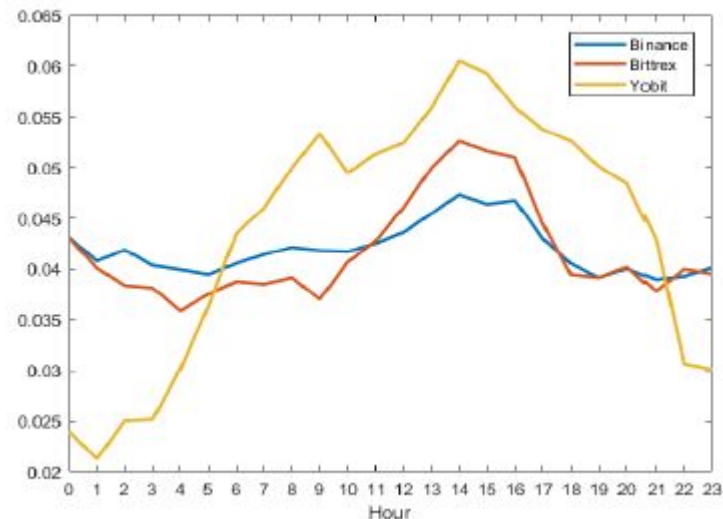
Distribution of P&Ds
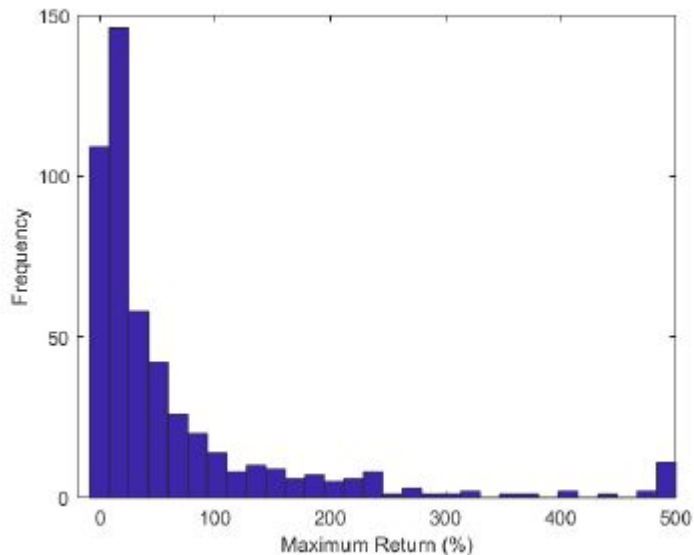
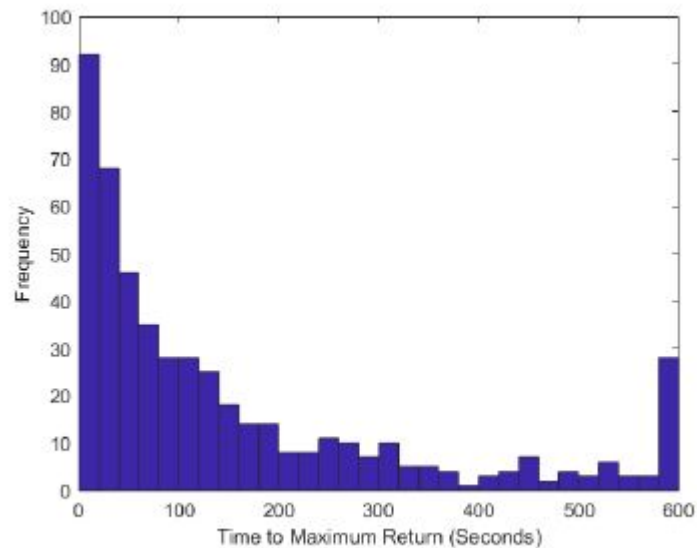| Distribution of P&D events by scheduled hour and exchange	Fraction of trading volume by hour and exchange

Distribution of max returns

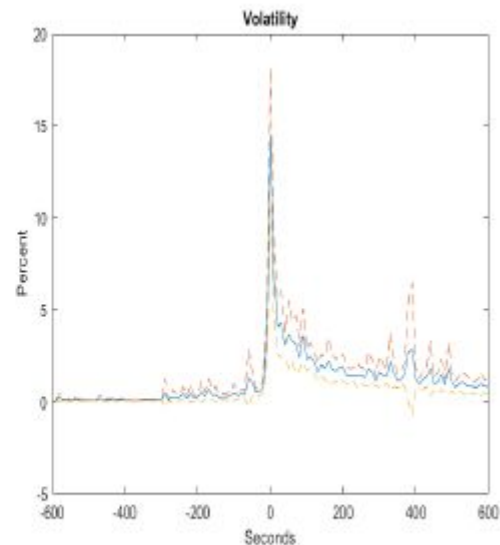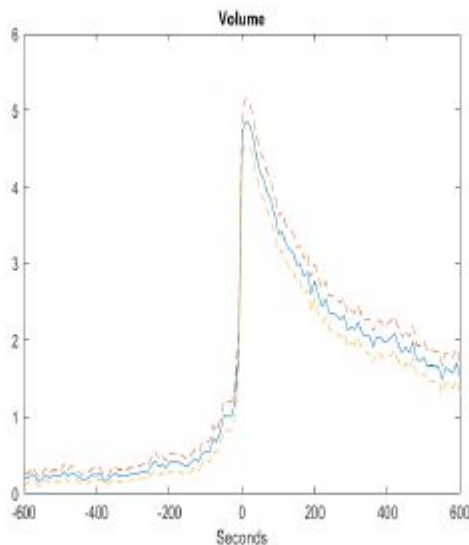

Distribution of P&D maximum returns*	Distribution of time to maximum returns

*A P&D's maximum return is defined as the ratio of the highest price achieved within 10 minutes after the pump announcement and the price ten minutes before the announcement minus 1

Return, Volume and Volatility Around Pump and Dumps
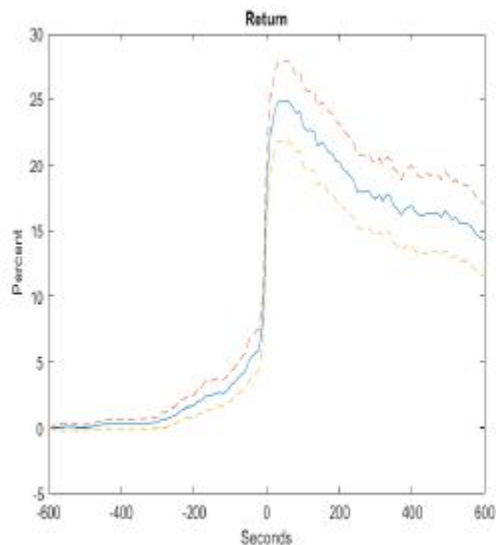
- Time 0 indicates 10 second interval from announcement
- Return := log change in price from 600 seconds before the announcement of P&Ds
- Volatility: = absolute value of returns in each 10-second interval

Average returns by purchase & sale time

Delay time	Before P&D	Purchase time, in seconds
		10	20	30	40	50	60	70	80	90	100	110	120
0	13.926	5.619	1.309	-0.063	-0.921	-1.272	-1.184	-1.051	-1.589	-0.015	-1.375	-0.703	0.048
10	18.387	6.505	1.594	-0.579	-1.516	-1.849	-1.050	-2.005	-1.959	-0.708	-1.890	-0.557	-0.186
20	18.395	6.534	1.180	-0.995	-1.494	-2.683	-2.143	-2.180	-2.736	-1.066	-1.606	-0.863	-0.917
30	18.436	5.405	0.709	-1.408	-1.837	-3.638	-2.541	-2.936	-3.030	-1.021	-1.969	-1.525	-1.411
40	17.806	4.659	0.200	-2.008	-2.643	-3.719	-2.347	-3.449	-2.931	-1.558	-2.702	-2.100	-1.783
50	16.989	4.195	-0.717	-2.931	-2.903	-4.267	-2.741	-3.339	-3.509	-2.128	-3.129	-2.346	-2.430
60	15.883	4.222	-1.258	-2.775	-3.383	-4.680	-2.704	-4.028	-3.979	-2.324	-3.437	-2.824	-2.884
70	14.964	3.538	-1.368	-3.105	-3.658	-4.751	-3.266	-4.361	-4.437	-3.267	-4.111	-3.540	-3.804
80	13.894	3.516	-1.698	-3.378	-3.683	-5.253	-3.723	-5.003	-4.598	-3.790	-4.863	-4.133	-4.035
90	12.626	2.876	-2.119	-3.603	-4.318	-5.786	-4.651	-5.732	-5.042	-4.470	-5.255	-4.498	-4.553
100	11.534	2.268	-2.453	-4.099	-4.910	-6.505	-5.824	-6.222	-5.864	-4.743	-5.530	-4.932	-4.714
110	11.087	1.963	-3.136	-4.612	-5.535	-5.999	-6.351	-6.941	-6.211	-4.981	-6.091	-5.108	-4.778
120	11.077	1.320	-3.352	-5.178	-6.388	-6.467	-7.082	-7.181	-6.437	-4.893	-6.204	-5.307	-5.346
130	10.596	0.887	-4.130	-6.146	-5.951	-6.838	-7.229	-6.706	-6.898	-4.711	-6.466	-5.743	-5.383
140	10.045	0.403	-3.511	-6.416	-6.648	-6.727	-7.471	-6.726	-6.028	-5.153	-6.304	-5.899	-5.682
150	9.974	-0.745	-3.935	-6.974	-7.024	-6.613	-8.021	-6.689	-6.399	-5.710	-6.588	-5.644	-5.621
160	9.368	-1.216	-4.492	-7.394	-7.251	-6.802	-7.930	-6.912	-6.547	-5.994	-7.055	-5.558	-5.988
170	8.724	-1.221	-4.363	-7.542	-7.580	-6.963	-8.238	-7.496	-7.008	-5.892	-7.023	-6.076	-6.181
180	8.213	-1.290	-4.615	-7.653	-7.747	-7.105	-8.753	-7.910	-7.458	-5.817	-7.463	-6.429	-6.584

Delay time:= Seconds waited before selling
Purchase time is relative to announcement
Before P&D is the 10 minutes before announcement - 'insiders'

Potential problems with the data

- No access to data from **closed channels** - did not observe a difference in outcome

- Yobit & Bittrex had s**ome incomplete data** - an analysis of Binance only yields similar results

- Our sample channels were **picked from Reddit & BitcointTalk** - it appears however that most Telegram channels are active on Reddit & BitcoinTalk.

Did the Bittrex ban have an impact?

Frequency of P&Ds around the ban
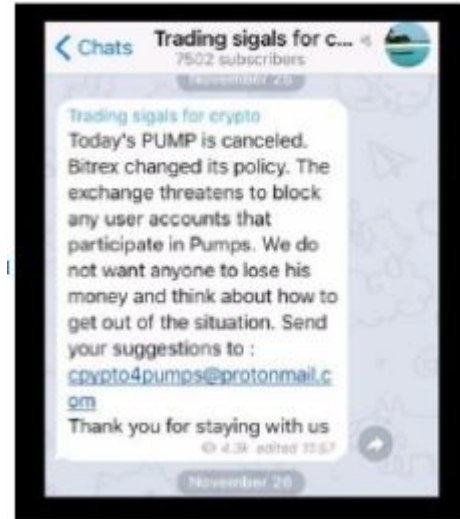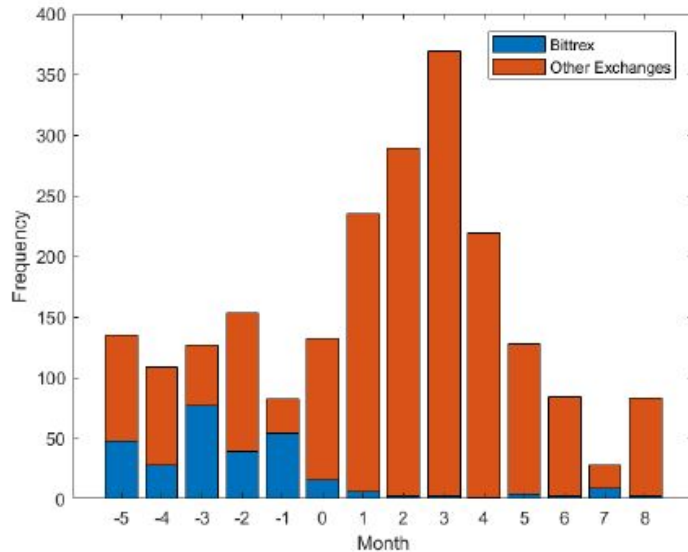
Why do people partake?

- Overconfidence
- Investors may allow short-term returns to cloud their judgement

Thank you