

Dark Trading and Corporate Cash Holdings

Khaladdin Rzayev*

The University of Edinburgh

Koc University

Systemic Risk Centre, The London School of Economics

Motivation

- ▶ One of the most notable changes in financial markets is the proliferation of “off exchange” or “dark” trading venues
- ▶ In 2013, dark trading already represented approximately 15% of the total consolidated volume in the U.S
- ▶ As of 2022, dark trading accounted for over 40% of the total shares traded in the U.S.

Motivation

- ▶ Mary Jo White, the 31st Chair of the U.S. SEC, noted that *“... we must continue to examine whether dark trading volume is approaching a level that risks seriously undermining the quality of price discovery provided by lit venues”*
- ▶ Regulators in the EU, Canada, and Australia had introduced caps to restrict such trading activities; however, recent trends have seen the removal of these intervention measures

Motivation

- ▶ A growing body of academic research has entered the debate, focusing on examining the implications of dark trading for market quality
- ▶ However, we are interested in whether **financial markets remain relevant to the real economy due to the prevalence of dark trading.**
- ▶ Inspired by this, we investigate the impact of dark trading on corporate cash policies.

Data

- ▶ Dark trading data is obtained from the daily TAQ
- ▶ Fundamentals are from Compustat
- ▶ Other databases: ExecuComp, Institutional Shareholder Services, Thomson Reuters institutional holdings (13F), CRSP, Kenneth French's Data Library

Results

	<i>Cash/TA</i>	
	(1)	(2)
<i>Dark ratio</i>	-0.049*** (-2.660)	-0.047*** (-2.617)
Controls	No	Yes
Firm FE	Yes	Yes
Industry \times Year FE	Yes	Yes
Obs.	37,603	37,603
R-squared	0.854	0.859

- ▶ *Cash/TA* is the ratio of cash and short-term investments to total assets.
- ▶ *Dark ratio* is the average daily proportion of shares traded in dark venues across all trading days in a fiscal year.

Results

- ▶ A one standard deviation increase in *Dark ratio* is associated with a 2.6% decrease in *Cash/TA*.
- ▶ However, omitted factors codetermining the propensity of investors to trade in dark pools and corporate cash policies would bias our OLS estimates.
- ▶ If investors base their dark trading decisions partly on a firm's cash position, causality may run in the opposite direction.

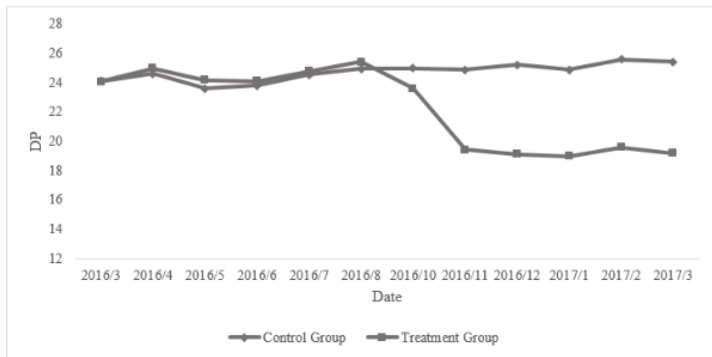
Addressing Endogeneity: Tick Size Pilot Program

- ▶ We employ the SEC's Tick Size Pilot Program and perform DiD tests surrounding its implementation and termination.
- ▶ During the program, stocks in the three treatment groups experienced varying changes to tick size and trading provisions

Addressing Endogeneity: Tick Size Pilot Program

- ▶ G1 - the minimum tick size for quotes of stocks increased from \$0.01 to \$0.05
- ▶ G2 - the minimum tick size for quotes and trades of stocks increased from \$0.01 to \$0.05
- ▶ G3 - subject to the same requirements as G2. Moreover, these stocks were further required to adhere to the “trade at” rule, which mandated that orders be executed in lit venues unless they could be executed in dark venues at significantly better prices

Addressing Endogeneity: Tick Size Pilot Program



Results

	Treated	Control	T - C	t-statistics
<i>ΔCash/TA</i>	-0.079%	-0.215%	0.136%	0.324
<i>Cash/TA</i>	0.218	0.228	-0.010	-0.447
<i>ln(Total assets)</i>	6.034	5.902	0.132	1.047
<i>Market-to-book assets</i>	1.628	1.656	-0.028	-0.180
<i>Cash flow/TA</i>	0.006	-0.001	0.007	1.390
<i>Cash flow volatility</i>	0.026	0.023	0.002	0.727
<i>Sales growth</i>	0.093	0.077	0.015	0.219
<i>Leverage</i>	0.225	0.237	-0.012	-0.521
<i>Net working capital/TA</i>	0.065	0.071	-0.006	-0.341
<i>ln(# of segments)</i>	1.487	1.590	-0.103	-1.520
<i>CAPX/TA</i>	0.010	0.011	-0.001	-0.596
<i>Acquisition/TA</i>	0.012	0.007	0.005	0.923
<i>R&D/Sale</i>	3.210	4.279	-1.069	-0.337
<i>Dividend dummy</i>	0.310	0.307	0.003	0.068
<i>ln(Firm age)</i>	2.324	2.272	0.052	0.777

Results - DiD

	<i>Cash/TA</i>			
	Program implementation		Program termination	
	(1)	(2)	(3)	(4)
<i>Treat</i> × <i>Post</i>	0.013* (1.781)		-0.015** (-2.212)	
<i>Post</i>	0.007 (0.350)		-0.026** (-2.103)	
<i>Treat</i> × <i>Post</i> ^{0 to +2}		0.010 (1.517)		-0.016** (-2.517)
<i>Treat</i> × <i>Post</i> ^{+3 to +4}		0.019** (1.973)		-0.013 (-1.619)
<i>Post</i> ^{0 to +2}		0.017 (0.846)		-0.029** (-2.130)
<i>Post</i> ^{+3 to +4}		0.057 (1.161)		-0.043** (-2.177)
Firm FE	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes
Observations	4,234	4,234	3,618	3,618
R-squared	0.955	0.955	0.960	0.960

Results - 2SLS IV

	Program implementation		Program termination	
	1st stage	2nd stage	1st stage	2nd stage
	<i>Dark ratio qtr.</i>	<i>Cash/TA</i>	<i>Dark ratio qtr.</i>	<i>Cash/TA</i>
	(1)	(2)	(3)	(4)
<i>Treat</i> × <i>Post</i> ^{0 to +2}	-0.035*** (-13.461)		0.032*** (10.425)	
<i>Treat</i> × <i>Post</i> ^{+3 to +4}	-0.039*** (-11.570)		0.036*** (8.598)	
<i>Post</i> ^{0 to +2}	0.006 (0.611)		0.018 (1.150)	
<i>Post</i> ^{+3 to +4}	-0.026 (-1.154)		0.022 (1.056)	
<i>Dark ratio qtr.</i> (<i>fitted</i>)		-0.395** (-2.013)		-0.477** (-2.411)
Firm FE	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes
Obs.	4,210	4,210	3,503	3,503

Economic Channels

- ▶ **Financial Constraint Channel:** Dark trading $\uparrow \rightarrow$ Market Quality (Liquidity and Price Discovery) $\uparrow \rightarrow$ Cost of Capital (Financial Constraints) $\downarrow \rightarrow$ Cash Holdings \downarrow
- ▶ **Corporate Governance Channel:** Dark trading $\uparrow \rightarrow$ Market Quality (Liquidity and Price Discovery) $\uparrow \rightarrow$ Corporate Governance $\uparrow \rightarrow$ Agency problems $\downarrow \rightarrow$ Cash Holdings \downarrow

Economic Channels - Results

- **Financial Constraint Channel:** the reduction in cash holdings should be more pronounced for firms that are more financially constrained, where the economic benefits of constraint easing are larger

	<i>Cash/TA</i>							
	<i>Total assets</i>		<i>Age</i>		<i>Dividend</i>		<i>WW index</i>	
	Small	Big	Young	Mature	Non-payer	Payer	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Dark ratio</i>	-0.070**	0.005	-0.063**	-0.008	-0.082***	0.032	-0.067**	-0.016
	(-2.437)	(0.281)	(-2.468)	(-0.311)	(-3.399)	(1.526)	(-2.365)	(-0.976)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,804	18,799	19,335	18,268	24,146	13,457	18,713	18,718
R-squared	0.847	0.855	0.878	0.838	0.857	0.847	0.850	0.866

Economic Channels - Results

- ▶ **Financial Constraint Channel:** firms with more shares traded in dark venues may benefit from the lower cost of capital and increase their capital raising

	$\Delta EISS/TA$	$\Delta DISS/TA$
	(1)	(2)
<i>Dark ratio</i>	0.040*** (2.663)	0.036*** (2.865)
Firm controls	Yes	Yes
Firm FE	Yes	Yes
Industry \times Year FE	Yes	Yes
Observations	37,603	37,603
R-squared	0.173	0.286

Economic Channels - Results

- ▶ **Corporate Governance Channel:** the negative effect of dark trading on cash holdings is expected to be stronger for firms with weaker governance, where the economic benefits of and the need for improved governance are larger

	<i>Cash/TA</i>									
	<i>Blockholder ownership</i>		<i>E index</i>		<i>Industry competition</i>		<i>CEO tenure</i>		<i>Co-option</i>	
	Low (1)	High (2)	High (3)	Low (4)	Low (5)	High (6)	High (7)	Low (8)	High (9)	Low (10)
<i>Dark ratio</i>	-0.058** (-1.977)	-0.001 (-0.022)	-0.138*** (-2.605)	-0.009 (-0.247)	-0.049** (-1.980)	-0.026 (-1.200)	-0.109*** (-2.793)	-0.031 (-0.837)	-0.116** (-2.427)	0.013 (0.326)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,144	15,135	5,153	6,629	17,212	20,391	7,549	8,496	5,585	5,888
R-squared	0.892	0.905	0.902	0.887	0.882	0.860	0.887	0.845	0.888	0.866

Economic Channels - Results

- ▶ **Corporate Governance Channel:** dark trading is likely to increase the likelihood of forced CEO turnover and strengthen the sensitivity of CEO turnover to poor stock performance

	<i>Forced turnover</i>	
	(1)	(2)
<i>Dark ratio</i>	0.078** (2.561)	0.084*** (2.738)
<i>Market-adjusted RET</i>	-0.040*** (-6.015)	-0.036*** (-5.659)
<i>Dark ratio</i> × <i>Market-adjusted RET</i>		-0.136** (-1.972)
Controls	Yes	Yes
Firm FE	Yes	Yes
Industry × Year FE	Yes	Yes
Other interactions		Yes
Observations	11,430	11,430
R-squared	0.224	0.228

Contribution

- ▶ The existing literature focuses on the market quality implications of dark trading; we explore the real economic effects of dark trading
- ▶ We show that dark trading impacts corporate cash policies via two channels: (i) financial constraint and (ii) corporate governance
- ▶ As regulators debate imposing restrictions on dark trading or revoking it, our findings provide new, critical insights for policymakers, investors, and corporate managers regarding the costs and benefits of dark trading activities.