# Hidden in Plain Sight: Equity Price Discovery with Informed Private Debt

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## Motivation: Longstanding Question in Finance

- How is information about firm value embedded in one security transmitted across markets/asset classes with diverse participants?
  - Cross-listed equity: Gagnon and Karolyi (2010)
  - Derivatives and equity: Easley, O'Hara, and Srinivas (1998), etc.
  - Bonds and equity: Kwan (1996), Hotchkiss and Ronen (2002)
  - CDS and equity: Longstaff et al. (2005), Acharya and Johnson (2007)
- Generally think of modern markets in the U.S. as being well-integrated
- *This paper*: We show this is not necessarily the case
  - Use the syndicated loan market as a laboratory to document the transmission of private information into markets for related public claims (equity)
  - Document economically important predictability: Long-Short alphas of 1.4-2.2% per month
  - Explore the frictions to market integration

## Why Syndicated Loans?

- ► Investors include banks, finance companies, and institutional investors
  - Investors can choose to be on the *public* or *private* side
  - Private investors receive monthly disclosures detailing covenant compliance, amendment requests, financial projections, acquisition plans, and monthly financial statements
  - Private investors cannot trade in both loans and stocks
  - Public investors commit to receiving only public information
- Beginning in 1998, increasing liquidity of loans as an asset class generated demand for mark-to-market pricing
- LSTA began aggregating quotes reported by dealer desks
  - Majority of dealers are on the private side
  - Price quotes may incorporate information that is not yet publicly available

*Research question*: Do syndicated loan market quotes reveal private information useful in predicting stock returns?

## Anecdotal "Result"

DEALS | Wed Feb 5, 2014 | 9:54pm EST

# Coca-Cola takes \$1.3 billion stake in Green Mountain



Green Mountain Coffee single-serve K-Cups are pictured in New York, in this file photo from May 3, 2012. REUTERS/Brendan McDermid/Files

By Lisa Baertlein and Phil Wahba

Green Mountain Coffee Roasters Inc, maker of the popular Keurig one-cup coffee brower, said on Wednesday the Coca-Cola Co (KCJN) had bought a 10 percent stake in it for \$1.25 billion and would help launch Green Mountain's new cold drink machine planned for release as soon as October.

Shares of Green Mountain GMCR.O soared 42 percent to \$114.85 in extended trading, while those of its likely new rival, SodaStream International Ltd (SODA.O), retreated 3.9 percent to \$34.39.

Under their 10-year agreement, the companies will collaborate on the development and introduction of Cota-Cola products on Green Mountain's upcoming machine that will serve both carbonated and non-carbonated beverages, including soft drinks, tea and juice.

- May 6, 2012: Green Mountain's loan facility starts trading with Bid of 96
- Jan 14, 2014: Bid on loan jumps to 97.5 (after no prior movement)
- Feb 5, 2014: GMCR closes at \$80.88, 10-year agreement with Coca-Cola announced after close
- Feb 6, 2014: GMCR opens at \$110.00, closes at \$102.10
- Feb 28, 2014: GMCR closes month at \$109.78, up 35.5% from beginning-of-month price (\$81.00)

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## Main Questions and Key Findings

- 1. Do syndicated loan market quotes reveal private information useful in predicting stock returns?
  - ► Long-Short strategy generating 1.4-2.2% per month
- 2. What is the friction preventing value-relevant information from being incorporated into stock prices?
  - Attention vs. expertise
  - Pricing lag persists even when loan returns publicly reported in WSJ
  - However, trading strategy cannot survive development of cross-market funds with expertise in loans and equity
- Big picture takeaway: market integration occurs when portfolios/trading desks are integrated

#### Data Sources

Monthly Syndicated Loan Returns

- Source: Loan Syndications and Trading Association (LSTA) Mark-to-Market Pricing Data
- Period: September 1998 August 2015

Monthly Stock Returns

- Source: Center for Research on Security Prices (CRSP)
- Matched to syndicated loans using Chava and Roberts' Dealscan-Compustat links extended through 2015

Quarterly Mutual Fund Holdings: Stocks and Syndicated Loans

- Source: CRSP Mutual Fund Database, Holdings Table
- Period: September 2010 June 2015

## Portfolio Formation

- Each month *t*, for each stock *i* with a syndicated loan outstanding:
  - Calculate  $SyndLoanReturn_{i,t} = (MidQuote_{i,t} - MidQuote_{i,t-1})/MidQuote_{i,t-1}$
  - Sort all stocks on SyndLoanReturn<sub>i,t</sub> into quintiles
  - Long high SyndLoanReturn stocks, short low SyndLoanReturn stocks
  - Hold for one month, until end of month t + 1, and repeat

## Performance: Raw and Risk-Adjusted

Equal-weighted strategy	Raw Return	CAPM Alpha	3-factor Alpha	6-factor Alpha	8-factor Alpha
1 (Short)	-0.535	-1.289	-1.527	-1.259	-1.289
	(-0.75)	(-3.26)	(-3.59)	(-3.71)	(-3.54)
2	0.922	0.352	0.116	0.230	0.185
	(1.77)	(0.91)	(0.39)	(0.78)	(0.58)
3	0.926	0.358	0.188	0.280	0.163
	(1.75)	(1.06)	(0.62)	(0.88)	(0.58)
4	1.052	0.469	0.233	0.308	0.245
	(1.88)	(1.54)	(0.81)	(1.05)	(0.81)
5 (Long)	1.580	0.964	0.628	0.889	0.812
	(2.40)	(2.12)	(1.70)	(3.09)	(2.86)
Long - Short	2.115	2.253	2.155	2.148	2.101
, in the second se	(4.63)	(4.83)	(4.77)	(4.89)	(4.52)
N months	204	204	204	204	204
Value-weighted strategy	Raw Return	CAPM Alpha	3-factor Alpha	6-factor Alpha	8-factor Alpha
		1	1	1	1
Long - Short	1.356	1.565	1.465	1.400	1.369
	(2.78)	(3.31)	(3.23)	(3.26)	(3.09)
N months	204	204	204	204	204

#### Performance: Time Series



CFIC 2018

### Performance: Fama-MacBeth Predictive Regressions

Excess Stock Return $(t+1)$	(1)	(2)	(3)	(4)	(5)	(6)
	0.400		0.407	0.404	0.414	0.005
Synd Loan Return (t)	0.468	0.444	0.407	0.494	0.414	0.667
	(2.84)	(2.46)	(2.14)	(2.61)	(2.27)	(3.14)
Size		-0.245	-0.265	-0.225	-0.245	-0.203
		(-1.75)	(-1.80)	(-1.73)	(-1.72)	(-1.25)
Book-to-market		-0.505	-0.481	-0.437	-0.543	-0.452
		(-1.46)	(-1.38)	(-1.31)	(-1.59)	(-1.17)
Lagged 6mRet		0.281	0.183	0.164	0.311	0.128
00		(0.32)	(0.19)	(0.19)	(0.38)	(0.14)
Stock Return (t)		. ,	-0.007	. ,	. ,	-0.013
			(-0.54)			(-1.06)
Market Leverage			, ,	-0.201		-0.218
0				(-1.46)		(-1.61)
SUE				( )	0.058	0.040
					(2.46)	(1.65)
Synd Loan Return × Size					( -)	-0.254
29						(-1.86)
Constant	0.879	4.097	4 326	3,984	4 136	3 740
Combiant	(1.72)	(1.98)	(1.99)	(2.14)	(1.99)	(1.53)
	(1.12)	(1.00)	(1.00)	(2.11)	(1.00)	(1.00)
Avg R-squared	0.028	0.108	0.133	0.141	0.130	0.200
Nobs	18 335	18 335	18 335	17 883	18 335	17 883
N months	204	204	204	204	204	204
1, 1101010	201	204	204	204	204	204

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#### Performance: Arbitrage Constraints

Excess Stock Return (t+1)	(1)	(2)	(3)	(4)	(5)
Synd Loan Return (t)	0.377	0.630	0.465	0.783	0.635
25-11-10-11-1 (1)	(2.03)	(2.78)	(2.09)	(3.03)	(2.42)
Size	-0.286	-0.256	-0.281	-0.342	-0.261
	(-1.90)	(-1.83)	(-2.14)	(-2.43)	(-1.64)
Book-to-market	-0.440	-0.500	-0.819	-0.633	-0.824
	(-1.25)	(-1.41)	(-2.09)	(-1.72)	(-2.00)
Lagged 6mRet	0.537	0.248	0.125	0.246	0.357
	(0.62)	(0.30)	(0.16)	(0.28)	(0.47)
IVOL	-0.271				-0.209
	(-2.22)				(-1.42)
Log(IO)		-1.210			-0.945
		(-1.04)			(-0.71)
Bid-Ask Spread			-0.306		-0.308
			(-0.34)		(-0.28)
Illiquidity				-0.146	-0.315
				(-0.86)	(-1.76)
Synd Loan Return $\times$ IVOL	-0.047				-0.197
	(-0.29)				(-0.95)
Synd Loan Return $\times$ Log(IO)		-0.733			-4.063
		(-0.73)			(-1.52)
Synd Loan Return $\times$ Bid-Ask Spread			0.333		2.271
			(0.32)		(1.28)
Synd Loan Return $\times$ Illiquidity				0.152	-0.244
				(0.57)	(-0.59)
Synd Loan Return $\times$ Size					-0.096
					(-0.49)
Constant	5.206	5.090	4.859	5.576	5.675
	(2.36)	(2.37)	(2.67)	(2.80)	(2.24)

Syndicated Loans and Stock Returns

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## Potential Channels

Investor Inattention

- Perhaps equity investors are just unaware of the LSTA data
- Or events in the syndicated loan market are not salient
- If information in the syndicated loan market is made salient, then the predictability should disappear (e.g., if loan returns printed in the WSJ)

Cross-Market Information Processing Constraints

- Even if the syndicated loan market information is presented on a platter, specialized equity investors may not know what to do with it
- Equity vs. debt market specializations may prevent equity investors from taking advantage

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#### Wall Street Journal

#### Syndicated Loans: Past Week's Biggest Movers

Syndicated loans are corporate loans that are bought or traded by a group of banks and/or institutional investors. Investment-grade loans are investment-grade or unaited loans priced a to rake whe loandon interbankon/fereid rate (Libor) plus 130 basis points (or 1.5 percentage points). Leveraged loans are speculat grade or unaited loans priced at or above Libor plus 131 basis points. Below are the biggest games and loans are among widely-quoted syndicated loans in scondary trading in the week ended Friday among the 182 loans with five or mare bids. All loans listed are bet-rem, or sold to institutional investors.

Name	Loan rating Moody's/S6P	Coupan/interest (Ubor + basis pts)	Maturity	Average bid (pct. pls.)	Weeklychg (pct.pts.)
Avis Budget Car Rental LLC	Ba3/B	L+125	April 1, '12	41.45	1.73
Charter Communications	B1/D	L+200	March 6, '14	82.13	3.63
Cincinnati Bell	Ba2/BB	L+150	Sept. 1, '12	91.80	1.30
Coffeyville	B2/88	275	Dec. 30, '13	75,50	1.75
Dana Corp	B3/B+	L+375	Jan. 31, '15	22.00	-1.71
Fairpoint Communications	B1/B	L+275	March 31, '15	44.50	-1.57
Georgia Pacific Corp	Ba2/BB+	L+175	Dec. 22, '12	88.47	1.37
Graham Packaging	B1/B+	L+200	Sept. 30, '11	85.75	1.45
Graphic Packaging International	Ba3/BB+	L+275	May 16, '14	85.86	1.71
Hercules Offshore	Ba3/BB	L+175	July 11, '13	68.30	-1.58
Hertz	Bal/BB+	L+150	Dec. 21, '12	76.33	4.05
Idearc	Caa3/CCC	L+200	Nov. 17, '14	37.09	6.23
Isle of Capri Casinos	B1/B+	L+175	Dec. 19, '13	69,70	2.13
Las Vegas Sands	B3/8-	L+175	May 1, '14	53.11	5.03
Lear Corp	N.R./N.R.	L+250	March 29, '12	33.97	1.33
Manitowoc Co Inc	Ba2/BB+	L+350	April 14, '14	70.92	-1.98
Novells	Ba3/BB	L+225	July 6, '14	62.60	1.67
OshKosh Truck	B2/B+	L+175	Nov. 9, '13	74.52	1.73
OSI Restaurant Partners, Inc.	B3/B+	L+225	May 9, '14	54.21	3.21
Oxbow Carbon & Minerals LLC	B1/88-	200	May 8, '14	70.04	1.50
Service Master	B1/B+	L+300 .	July 24, '14	67.50	3.30
Targa Resources Inc	N.R./N.R.	L+200	Oct. 31, '12	80.45	6.98
Toys R Us	B2/BB-	L+425	July 19, '12	62.07	2.67
United Air Lines	B3/B+	L+200	Feb. 13, '13	47.22	-1.84
Venetian Macau US Finance CoLLC	83/8-	L+225	May 25, '13	65.05	1.37

Note: These are the averages of indicative bid prices provided by bank-lean traders and expressed as a percentage of the par or face value. All ratings are for specific leans and pack for the company. These prices do not represent actual trades nor are they offers to trader statement hey are estimated values provided by dealers. The, Indicates that the lissues is no rated

Source: LSTA/Thomson Reuters MTM Pricing

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Aug 2000 - Aug 2015: WSJ printed a weekly table of 25 "Biggest Movers"

#### Wall Street Journal: Portfolio Returns

VW Long-Short Portfolio Returns	Raw Return	CAPM Alpha	3-factor Alpha	6-factor Alpha	8-factor Alpha
WSJ List	2.334	2.404	2.249	2.384	2.088
	(3.00)	(3.04)	(2.84)	(3.41)	(2.85)
Non-WSJ List	1.315	1.451	1.226	1.222	1.107
	(2.44)	(2.76)	(2.73)	(2.67)	(2.45)

EW Long-Short Portfolio Returns	Raw Return	CAPM Alpha	3-factor Alpha	6-factor Alpha	8-factor Alpha
WSJ List	2.458	2.564	2.349	2.514	2.092
	(3.16)	(3.32)	(3.45)	(4.30)	(3.28)
Non-WSJ List	1.767	1.904	1.643	1.710	1.556
	(3.70)	(4.18)	(4.61)	(4.60)	(4.22)

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## Potential Channels

Investor Inattention

- Perhaps equity investors are just unaware of the LSTA data
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#### Cross-Market Information Processing Constraints

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## Stocks held by Integrated Funds

Integrated Funds

- Search post-2010 mutual fund holdings data for hybrid funds that own both equities and syndicated loans
- Flag stocks held by integrated funds in month prior to portfolio formation
- Prediction: if loan market information is used by investors with cross-market expertise, then expect lower predictability among stocks held by integrated funds
- Caveat: Flagged equities may be observably (and unobservably) different (e.g., size)

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#### Integrated Funds: Active in both markets

Excess Stock Return (t+1)	(1)	(2)	(3)
0 11 D ( ()	1 500	1.415	0.005
Synd Loan Return (t)	(2.11)	1.417	2.235
Sund Loop Dotum v Integrated Fund	1.840	(2.04)	2.00)
Synd Loan Return × Integrated Fund	(211)	( 2.40)	(2.401
Integrated Fund	0.103	0.158	0.600
Integrated Fund	(0.40)	(0.29)	(1.26)
Size	(0.10)	0.055	0.081
one.		(0.29)	(0.33)
Book-to-market		-0.857	-0.598
book to market		(-2.32)	(-1.86)
Lagged 6mRet		0.368	0.336
		(0.37)	(0.41)
IVOL		()	-0.250
			(-1.17)
Log(IO)			-0.145
0.0			(-0.20)
Bid-Ask Spread			1.027
			(0.39)
Illiquidity			-0.161
			(-0.43)
Synd Loan Return × Size			0.784
			(2.74)
Synd Loan Return × IVOL			-0.087
			(-0.23)
Synd Loan Return $\times$ Log(IO)			-0.950
			(-0.68)
Synd Loan Return × Bid-Ask Spread			3.832
0 17 D. D. D. D.			(0.68)
Synd Loan Return × Illiquidity			0.109
a	1.100	0.700	(0.12)
Constant	1.182	0.730	0.067
	(1.69)	(0.24)	(0.02)
Avg B-souared	0.061	0.132	0.267
N obs	5.633	5.633	5.631
N months	60	60	60
	50		

## Conclusion

- 1. Demonstrate that stock returns can be predicted using private information revealed in syndicated loan market quotes
- 2. Show that attention is not enough to integrate these markets pricing lag persists even when loan returns are publicly reported in the WSJ
- 3. Provide evidence that integrated investors (i.e., those with ability to interpret information in both markets) eliminate the predictable pattern