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**Discussion:
Dividend Policy in the Era of Big Data**

by Yancheng Qiu, Tao Shu, and Shujing Wang

ABFER 2021

Overview

How does big data availability affect corporate policies (dividends)?

- I like the motivation for this question
 - Answer is not obvious
- Thorough empirical analysis
- Suggestions



Chain	WMT - Walmart	Start	2016-07-04	End	2016-07-04	Version	USRetailMicro-2.1.1
0301	AZ	4	02:28:59	0%	0%	DG	28° 103
0306	AZ	4	02:28:59	0%	0%	DG	28° 46
0296	AZ	4	02:28:59	0%	0%	DG	29° 148
0310	AZ	4	02:28:59	0%	0%	DG	27° 40
0312	AZ	4	02:28:59	0%	0%	DG	28° 129
0296	AZ	4	02:28:59	0%	0%	DG	28° 94
0318	AZ	4	02:28:59	0%	0%	DG	27° 107
0297	AZ	4	02:28:59	0%	0%	DG	26° 26
0296	AZ	4	02:28:59	0%	0%	DG	28° 26
0316	AZ	4	02:28:59	0%	0%	DG	27° 32
0295	AZ	4	02:28:59	0%	0%	DG	28° 28
0300	AZ	4	02:28:59	0%	0%	DG	29° 13
0321	AZ	4	02:28:59	0%	0%	DG	28° 80
0308	AZ	4	02:28:59	0%	0%	DG	27° 85
0304	AZ	4	02:28:59	0%	0%	DG	28° 99
0316	AZ	4	02:28:35	0%	0%	DG	27° 30
0306	AZ	4	02:28:35	0%	0%	DG	27° 151
0308	AZ	4	02:28:35	0%	0%	DG	28° 135
0322	AZ	4	02:28:35	0%	0%	DG	27° 74
0320	AZ	4	02:28:35	0%	0%	DG	27° 36

Logout 456 sc2105

Scenario: 55457889010 01 P001--20700101E3ABF800 PORWMT 0312 033.5706, -112.23 Scale 2.5 pt/m





Sam Walton's personal 1946 Ercoupe



“A well-known application of alternative data is satellite imagery analysis of parking lots, which is replacing the old-school approach of physical foot-traffic counts with clickers.” (Deloitte 2017)



Hedge funds



Orbital Insight



RS Metrics

Chain	VMT	Walmart	Start	2016-07-04	End	2016-07-04	Version	USRetailMicro-2.1.1	
0301	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	103
0306	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	46
0296	AZ	WALCOP	4	02:28:59	0%	0%	DG	29°	148
0310	AZ	WALCOP	4	02:28:59	0%	0%	DG	27°	40
0312	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	129
0296	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	94
0318	AZ	WALCOP	4	02:28:59	0%	0%	DG	27°	107
0297	AZ	WALCOP	4	02:28:59	0%	0%	DG	26°	26
0296	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	26
0316	AZ	WALCOP	4	02:28:59	0%	0%	DG	27°	32
0295	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	28
0300	AZ	WALCOP	4	02:28:59	0%	0%	DG	29°	13
0321	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	80
0308	AZ	WALCOP	4	02:28:59	0%	0%	DG	27°	85
0304	AZ	WALCOP	4	02:28:59	0%	0%	DG	28°	99
0316	AZ	WALCOP	4	02:28:35	0%	0%	DG	27°	30
0306	AZ	WALCOP	4	02:28:35	0%	0%	DG	27°	151
0308	AZ	WALCOP	4	02:28:35	0%	0%	DG	28°	135
0322	AZ	WALCOP	4	02:28:35	0%	0%	DG	27°	74
0320	AZ	WALCOP	4	02:28:35	0%	0%	DG	27°	36

Logout 456 scores

Scene:055457889010 01 P001--20700101E3ABF800 PORWMT 0312 033.5706, -112.23 Scale 2.5 point

This paper



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0295	AZ	4	02:28:59	0%	0%	DG	28°	28
0300	AZ	4	02:28:59	0%	0%	DG	29°	13
0321	AZ	4	02:28:59	0%	0%	DG	28°	80
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0306	AZ	4	02:28:35	0%	0%	DG	27°	151
0308	AZ	4	02:28:35	0%	0%	DG	28°	135
0322	AZ	4	02:28:35	0%	0%	DG	27°	74
0320	AZ	4	02:28:35	0%	0%	DG	27°	36



Orbital Insight



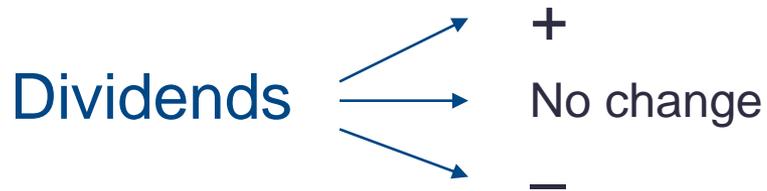
RS Metrics

Research Question

Zhu (2019) finds... availability of alternative data:

- Reduces information asymmetry between firm and investors
- Improves ability of investors to monitor managers

This paper:



How does big data availability affect corporate policies (dividends)?

Three theories of dividend policy

Outcome model

- Investors push managers to pay dividends, especially in firms with poor investment opportunities (La Porta et al. 2000)
- Dividends and governance are *complements* in addressing agency issues

Substitution model

- Dividends are a *substitute* for effective governance in addressing agency issues

Signaling model

- Managers use dividends as a costly signal to convey private information

Three theories of dividend policy

Both the substitution model and signaling model predict that big data availability substitutes for dividends

Substitution model

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Three theories of dividend policy

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Substitution model

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Signaling model

- Managers use dividends as a costly signal to convey private information
- Dividends are a *substitute* for publicly available information about the future prospects of the firm

Issues with the Signaling Model

Empirical evidence in the literature...

DeAngelo, DeAngelo, and Skinner (2009, p. 185):

“To establish that signaling motives are a pervasively important influence on firms' payout decisions, one must...first and foremost explain why firms with little need to signal typically make the largest payouts, while firms with the greatest need to communicate with investors typically pay few or no dividends at all.”

Predicted change in dividends

Both the substitution model and signaling model predict that big data availability substitutes for dividends

Substitution model

- Dividends are a *substitute* for effective governance in addressing agency issues



Signaling model

- Managers use dividends as a costly signal to convey private information
- Dividends are a *substitute* for publicly available information about the future prospects of the firm



Substitution Model and Signaling Model

What if the paper had instead found that big data availability is associated with a decrease in dividends?



In the “Upside Down” dimension where this happens, can we distinguish between the Substitution Model and Signaling Model (using the setting of big data)?

Two models only?

Outcome model

- Investors push managers to pay dividends, especially in firms with poor investment opportunities (La Porta et al. 2000)
- Dividends and governance are *complements* in addressing agency issues



Substitution and signaling model

- Dividends are a *substitute* for effective governance or publicly available information



Two models only?

- In the big data availability setting, testing whether dividends increase or decrease is testing whether big data *complements or substitutes* for the role of dividends
- Combining substitute and signaling model would:
 - Focus the motivation
 - Avoid issues with the signaling model (i.e., firms with little need to signal typically have the largest dividend payout)
 - Avoid issues if we were instead in the “Upside Down” and the paper finds the opposite result

The Outcome Model (Complement)

- Investors push managers to pay dividends after the availability of satellite data

The Outcome Model (Complement)

- Investors push managers to pay dividends after the availability of satellite data
- How?
- Provide more explanation about how satellite data availability helps investors to push managers to pay dividends

Example: Activist Investors

- D.E. Shaw and Lowe's
- From Wall Street Journal Jan. 2018:

Activist investors are watching from the skies.

When D.E. Shaw & Co. sought to explain to Lowe's Cos. why it thought the home-improvement giant was underperforming rival Home Depot Inc., the New York hedge fund was armed with a data set that included an analysis of the number of cars in the two chains' parking lots from two years of satellite imagery, according to people familiar with the matter.

The fund, which invested \$1 billion in Lowe's, had accessed the images and counted the cars to help bolster an argument that the retailer wasn't attracting enough customers, the people said. The fund also used U.S. census data to map out potential customers and determine the reach of the chains, and it surveyed thousands of customers.

Example: Activist Investors

1. Activist investors, armed with insights from satellite images, are better able to push for the company to increase dividends

- Activist investors often pressure management to increase share buybacks and dividends
- Look at Item 4 of Schedule 13D to determine if activists pursued a change in dividend policy:

Item 4. Purpose of Transaction.

(e) Any material change in the present capitalization or dividend policy of the issuer;

2. Perhaps the paper finds increases in dividends because firms are attempting to deter activists

Deterring or distracting activists

EMC²

Gantchev, Gredil, and Jotikasthira (2019): “EMC started paying a dividend in part to distract activist attention from its large cash balance.”

Kohl's Is 'Way Ahead' of Activist Investors, CEO Says

Retail chain said it would restart share buybacks and dividends and spend at least \$550 million on capital expenditures during new fiscal year

WSJ

Mar. 2021



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Empirical Tests

- Generalized DiD

$$Y_{it} = \alpha_i + \alpha_t + \beta \text{PostRelease}_{it} + \gamma X_{it-1} + \epsilon_{it},$$

- Simple DiD

$$Y_{it} = \beta_0 + \beta_1 \text{Post} + \beta_2 \text{Treat} + \beta_3 \text{Post} * \text{Treat} + \gamma X_{it-1} + \epsilon_{it}$$

Empirical Tests

- Generalized DiD

$$Y_{it} = \alpha_i + \alpha_t + \beta \text{PostRelease}_{it} + \gamma X_{it-1} + \epsilon_{it},$$

- Simple DiD

$$Y_{it} = \beta_0 + \beta_1 \text{Post} + \beta_2 \text{Treat} + \beta_3 \text{Post} * \text{Treat} + \gamma X_{it-1} + \epsilon_{it}$$

$$\alpha_i + \alpha_t$$

Post and *Treat* main effects are subsumed by firm and year fixed effects

Readers should note that *PostRelease* is the same as *Post*Treat*

Main Effects Missing from Regressions

Keep in mind that *PostRelease* is the same as *Post*Treat*

$$Y_{it} = \alpha_i + \alpha_t + \beta_1 \text{PostRelease}_{it} \times \text{LowGrowth}_{it} + \beta_2 \text{PostRelease}_{it} + \beta_3 \text{LowGrowth}_{it} + \gamma X_{it-1} + \epsilon_{it}.$$

Make sure main effects *Post* and *Treat* are interacted with *LowGrowth* and included in the regression

$$\begin{aligned} Y_{it} &= \alpha_i + \alpha_t + \beta_1 \text{Post} * \text{Treat} * \text{LowGrowth} + \beta_2 \text{Post} * \text{Treat} \\ &+ \beta_3 \text{LowGrowth} + \beta_4 \text{Post} * \text{LowGrowth} + \beta_5 \text{Treat} * \text{LowGrowth} \\ &+ \gamma X_{it-1} + \epsilon_{it} \end{aligned}$$

Empirics: Cross-sectional tests

My view of cross-sectional tests: They should support the main prediction

- Section 5.1 finds that low-growth firms experience a greater increase in dividends → supports the outcome model
- Section 5.2.1 finds that low-growth firms experiencing a greater increase in dividends exists only in high-entrenchment firms
 - Combines two cross-sectional variables: investment opportunities and managerial entrenchment

$$\begin{aligned} Y_{it} = & \alpha_i + \alpha_t + \beta_1 PostRelease_{it} \times LowGrowth_{it} \times PoorGovern_{it} + \\ & \beta_2 PostRelease_{it} \times LowGrowth_{it} \times GoodGovern_{it} + \beta_3 PostRelease_{it} \times PoorGovern_{it} + \\ & \beta_4 PostRelease_{it} \times GoodGovern_{it} + \beta_5 LowGrowth_{it} \times PoorGovern_{it} + \beta_6 LowGrowth_{it} \times \\ & GoodGovern_{it} + \beta_7 PoorGovern_{it} + \gamma X_{it-1} + \epsilon_{it}. \end{aligned} \quad (3)$$

Empirics: Cross-sectional tests

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- Section 5.1 finds that low-growth firms experience a greater increase in dividends → supports the outcome model
- Section 5.2.1 finds that low-growth firms experiencing a greater increase in dividends exists only in high-entrenchment firms
 - Could perform cross-sectional tests one at a time to clarify what we learn from this test

$$\begin{aligned} Y_{it} = & \alpha_i + \alpha_t + \beta_1 \text{PostRelease}_{it} \times \text{LowGrowth}_{it} \times \text{PoorGovern}_{it} + \\ & \beta_2 \text{PostRelease}_{it} \times \text{LowGrowth}_{it} \times \text{GoodGovern}_{it} + \beta_3 \text{PostRelease}_{it} \times \text{PoorGovern}_{it} + \\ & \beta_4 \text{PostRelease}_{it} \times \text{GoodGovern}_{it} + \beta_5 \text{LowGrowth}_{it} \times \text{PoorGovern}_{it} + \beta_6 \text{LowGrowth}_{it} \times \\ & \text{GoodGovern}_{it} + \beta_7 \text{PoorGovern}_{it} + \gamma X_{it-1} + \epsilon_{it}. \end{aligned} \quad (3)$$

Empirics: Cross-sectional tests

- Section 5.2.2 finds that low-growth firms experiencing a greater increase in dividends exists only in firms that are not financially constrained
 - Could perform cross-sectional tests one at a time to clarify what we learn from this test
 - Does cross-sectional variation in the extent of the effect, based on financial constraints, support the outcome model? More clarification needed.
- Again, need to include interactions of main effects *Post* and *Treat* with each cross-sectional variable

Other Suggestions

- I appreciate that the paper acknowledges the selection concern that data vendors may time the release of data based on firm characteristics – those firm characteristics may be related to dividend policy
 - Assessing the change in the DiD coefficient after adding firm characteristics as control variables does not address the selection concern. With firm fixed effects, very little variation in firm characteristics within-firm.
 - Assessing if pre-treatment trends are parallel also does not address the selection concern. Instead, it assesses whether the control group is appropriate.

<u>Variable</u>	<u>#Obs</u>
<i>Div/MV</i> (%)	6,321
<i>Div/E</i> (%)	6,108
<i>DivDum</i> (%)	6,323

Why 2 obs have no MV?

Div/E set to missing when negative NI

Other Suggestions (cont'd)

- “the coefficient of 0.598 in Column (2) indicates that among high-entrenchment firms, the increase in dividend yield is 0.598 percentage-point higher for low-growth firms than for high-growth firms.”

	<i>Div. Yield (%)</i>	
	(1)	(2)
<i>PostRelease</i> × <i>LowSG</i> × <i>HighEntrench</i>	0.690*** (3.88)	0.598*** (4.39)
<i>PostRelease</i> × <i>LowSG</i> × <i>LowEntrench</i>	0.249 (0.33)	0.099 (0.13)

Other Suggestions (cont'd)

- “the coefficient of 0.598 in Column (2) indicates that among high-entrenchment firms, the increase in dividend yield is ~~0.598~~ 0.499 percentage-point higher for low-growth firms than for high-growth firms.”

	<i>Div. Yield (%)</i>	
	(1)	(2)
<i>PostRelease</i> × <i>LowSG</i> × <i>HighEntrench</i>	0.690*** (3.88)	0.598*** (4.39)
<i>PostRelease</i> × <i>LowSG</i> × <i>LowEntrench</i>	0.249 (0.33)	0.099 (0.13)

$$0.598 - 0.099 = 0.499$$

- Test whether 0.499 difference is significant

Other Suggestions (cont'd)

- “the coefficient of 0.598 in Column (2) indicates that among high-entrenchment firms, the increase in dividend yield is 0.598 percentage-point higher for low-growth firms than for high-growth firms.”

	<i>Div. Yield (%)</i>	
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- Not a suggestion, but a compliment: I like Table 4's alternative sample tests

Summary

Interesting, thoughtful paper that shines a light on an important topic

Suggestions:

- Focus predictions and consider the role of activist investors
 - In support of the outcome model, activists could be pushing for more dividends / companies increase dividends to distract activists
- Remember to include main effects' interactions
- Refine cross-sectional tests to help readers like myself 😊
- Best of luck with the paper!



THANK YOU



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