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The impact of Wayfair vs. South Dakota on retailers: an event study

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Abstract

We study the impact of the supreme court ruling of Wayfair vs. South Dakota on the retailing industry. We do so by examining financial market reactions to the ruling. Specifically, we find positive abnormal returns for local retailers and insignificant results for online retailers. Our results are consistent with the notion that the supreme court ruling benefited the local retailers due to the removal of the tax loophole that put them at a disadvantage versus online retailers.

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Today, there is a robust consensus among economists that rivalry between firms is an essential precondition of a dynamic, innovative market economy.

– Brink Lindsey, The Economist, 2018

1. Introduction

In the recent past, states were not allowed to charge taxes on goods sold by out-of-state sellers, unless they had some physical presence in the taxing state (according to the supreme court ruling of Quill Corp. v. North Dakota (1992)). However, on June 21, 2018, the Supreme Court of the United States held by a 5-4 majority that states may charge taxes on goods sold by out-of-state sellers whether the seller has a physical presence in the taxing state (South Dakota v. Wayfair). In effect, the Wayfair decision closed an "online sales tax loophole" which supposedly provided an unfair competitive advantage to online retailers over brick and mortar stores. The alleged competitive advantage stems from the fact that consumers would be more inclined to purchase goods from online retailers who do not charge tax in the shopper's state.

Did the ruling have the intended effect on the competitive landscape of retailing, and thus level the playing field for the fierce rivalry between online vs. traditional retailers? To investigate the question, this paper examines stock market returns surrounding the ruling of South Dakota v. Wayfair. Our justification for doing so is that the ruling provides a clean experimental setting to test the impact (treatment) of the tax rule changes, since the result of the ruling was largely unknown beforehand and thus can be considered an exogenous shock. As such, we are effectively able to isolate the effect of changes in sales taxes from other factors which could potentially affect consumer purchase decisions and accordingly, firm profits. Furthermore, examining stock market reactions to the ruling allows us to assess the magnitude of the financial impact of the tax rule changes.

Using an event study methodology, we show that the ruling of South Dakota v. Wayfair indeed benefited the traditional brick-and-mortar retailers (hereafter "B-tailers"). B-tailers experienced significant average positive abnormal returns of 2.296% or 2.367% on the ruling announcement day, depending on the benchmark return used. The impact on brick-and-mortar retailers with e-commerce business (hereafter "hybrids") was also significant yet weaker, as the ruling provided competitive advantage for hybrids in states which they have local presence, but not in states which they sell mostly online. Finally, rather surprisingly, we find that the impact on the stock price of purely online retailers (hereafter "E-tailers") was insignificant. In this case, the negative impact of the tax rule change on the E-tailers could have been offset by the potential shift in sales from small-to-medium online sellers to large E-tailers, which were the focus of our study. The shift could occur as the smaller online sellers who are unable to absorb the increased tax compliance costs and complexity may be inclined to sell more of their products through large E-tailers' marketplaces such as Amazon, Etsy, and Ebay, which would collect and remit sales tax for them, easing their tax compliance burden (Simon, 2019)

Our paper makes the following contributions to the literature. First, this paper contributes to the existing literature about tax and retailer competition (e.g. Baugh et al. (2018), Einav et al. (2014), Hoopes et al. (2016)) as the first study that examines a true shock to the competitive

landscape of retailing countrywide. By analyzing the impact of Supreme Court ruling decisions in an event study framework, we can provide a stronger test of the effect of the tax rule changes. Second, we shed light on the impact of government policy on the retailing industry by analyzing the financial market reactions to changes in tax rules. As policymakers aim to promote fair competition in the marketplace to facilitate economic growth, the impact of taxes on competition is an important issue which we investigate in this paper.

The remainder of the paper is organized as follows. Section 2 describes the event study method and sample data. Section 3 shows the empirical results, and Section 4 concludes.

2. Methods and Data

2.1. Event Study Methodology

In this paper, we use an event study methodology to analyze the effect of a tax rule change on the stock performance of retailers. Such type of event study was introduced by Fama, Fisher, Jensen and Roll (1969) and is widely used in finance and economics research (e.g. Austin 1993; Dimson and Marsh 1986; Chang, Cheng and Yu 2007; Choi, Du and Malcolm 2019). It examines whether there is a change in the cross-sectional return distribution when a sample of firms experience a common exogenous event. The underlying assumption is that the market is efficient so that the stock price may quickly react to and reflect new public information as it pertains to a firm's prospects. Therefore, if an event could have an influence on a firm's profitability, cash flows, or valuation, we may observe a significant stock price movement immediate following the announcement of the event. The magnitude of the movement reflects the firm's degree of exposure to the event and is called the abnormal return.

For each sample security i, the abnormal return at day t is defined as:

$$AR_{i,t} = R_{i,t} - ER_{i,t} \tag{1}$$

where $R_{i,t}$ is the realized return of security i at day t, and $ER_{i,t}$ is the expected return of security i at day t if the event does not occur. Ideally, if $ER_{i,t}$ could be estimated without bias, $AR_{i,t}$ would be the difference between the return conditional on the event and the unconditional return, and therefore would capture the impact of the event on firm valuation.

In our study, we use two benchmarks as a proxy for $ER_{i,t}$. Our first proxy is the expected return of a stock based on the Fama and French (1993) 3-factor Model:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + s_i SMB_t + h_i HML_t + \varepsilon_{i,t} \tag{2}$$

Our second proxy is the expected return of a stock based on the Carhart (1997) 4-factor Model:

$$R_{i,t} = \alpha_i + \beta_i R_{M,t} + s_i SMB_t + h_i HML_t + u_i UMD_t + \varepsilon_{i,t} \tag{3}$$

where i indexes firms and t indexes day; $R_{M,t}$ is the market risk premium at day t; SMB_t is the return on the small-minus-big (SMB) portfolio at day t to capture the firm size effect; HML_t is the return on the high-minus-low (HML) portfolio at day t to capture the value effect; UMD_t is the return on the up-minus-down (UMD) portfolio at day t to capture the momentum effect.

Following Fernando, May and Megginson (2012), we estimate all parameters based on the historical daily return in a window of [-290, -31] from the event day 0, with a requirement of having a minimum length of 100 days. Then $ER_{i,t}$ is the expected return implied by the factor model for company i at day t.

2.2. Sample Construction and Description

The Wayfair ruling was released in the morning of June 21, 2018 - which was during regular stock trading hours[1] - allowing sufficient time for the market to react to the ruling via trading during the day, assuming markets are efficient. Therefore, in our event study analysis, we use June 21, 2018 as our event day (Day 0) and define the event window as the time period around the event day.

We construct our initial sample based on the Compustat and CRSP database from WRDS. We initially include 187 U.S. retailers (SIC 5200-5999) that are public traded companies listed on NYSE, NASDAQ or AMEX during the estimation window [-290, -31] around the day 0 and having stocks trading on event day. We exclude 49 restaurant retailers, 2 pawn retailers, 9 gas/propane retailers and 1 large building material retailer, because out-of-state online sales are unavailable for those retailers. We also omit 5 retail consulting firms as they are not retailers, and 18 motor dealerships since the sales tax loophole does not apply. Additionally, we find that some online marketplaces are classified as technology firms instead of retailers, likely due to their tech orientation. Therefore, we check all firms with industry SIC 7370 (Services-Computer Programming, Data Processing, etc.) and add 3 online marketplaces, including eBay.com, to the sample. This leaves us with a final sample of 106 retailers.

We then separate our sample into three broad categories: B-tailers, hybrids and E-tailers. Following Hoopes et al. (2016), we define E-tailers as the retailers which have retail locations in no more than one state. We define hybrids as the retailers with retail locations in more than one state and an online store/marketplace. Lastly, B-tailers have retail locations in more than one state but no online store/marketplace. Our sample includes 35 B-tailers, 60 hybrids and 11 E-tailers.

3. Results

3.1. Event Study

[1] The ruling document released does not provide the exact release time on June 21, 2018. However, the earliest news report we found online was released at 10:31 AM by Politico.
https://www.politico.com/story/2018/06/21/supreme-court-online-sales-tax-collection-661647

Table 1 shows the average returns, as well as the average abnormal returns based on the Fama-French 3-factor model, and the Carhart 4-factor model on Day 0 and Day [-1, 0][2]. The average abnormal return on Day 0 is 2.296% for B-tailers based on the Fama-French 3-factor Model, which is significant at 1% level. Using Carhart's 4-factor model to develop a benchmark expected return for each firm, the average abnormal return is 2.367% and significant. As expected, both models indicate a positive impact of the ruling on B-tailers.

Table I: Abnormal Returns

Store	N	Day [0]		Day [-1, 0]	
		3-Factor Model	4-Factor Model	3-Factor Model	4-Factor Model
B-tailers	35	2.296%***	2.367%***	2.974%***	3.069%***
		2.467%***	2.510%***	2.899%***	2.948%***
Hybrids	60	1.428%***	1.525%***	1.709%***	1.839%***
		1.142%***	1.210%***	1.426%***	1.528%***
E-tailers	11	-0.788%*	-0.790%*	-0.147%	-0.001%
		-0.661%	-0.708%	0.374%	0.004%

Notes: Table gives the average abnormal returns for n=106 retailers in our sample. Day 0 is the trading day when the Wayfair ruling was released. ***, ** and * indicate significance at 1%, 5% and 10% respectively.

Similar to B-tailers, the abnormal return of hybrid retailers is significant and positive but smaller in magnitude. The average abnormal returns based on the Fama-French 3-factor model is 1.428%, which is 0.868% lower than that of B-tailers. A possible reason is that hybrid retailers will gain competitive advantage due to the ruling only in the states which they have physical stores, but not in states that they do not have a local presence.

Finally, we find an average abnormal return of -0.788% and -0.790% for E-tailers based on the two different models. Both numbers are significant (yet weak) at the 10% level. However, we do not find significance for the median values and the average abnormal return in event window [-1, 0]. The weak significance of the abnormal return for E-tailers could be driven by a combination of two counteracting effects. On one hand, existing literature shows that remitting sales taxes results in a significant decrease in internet sales (e.g. Anderson et al. 2010; Baugh et al. 2018; Einav et al. 2014). Accordingly, the Wayfair ruling could cause customers to shop locally and thus negatively impact the sales of E-tailers. At the same time, the ruling is not a federal law, and therefore what is taxed and how often those taxes are paid vary from state to state. As such, the complexity and costs of tax compliance could push small and midsize online retailers to shift sales away from their own online stores to large E-tailers' online marketplaces, which would ultimately benefit those large E-tailers.

In an unreported test, we also check the abnormal returns around the hearing day (Apr 17, 2018) and find a similar (but weaker) pattern of abnormal returns. This suggests that the impact

[2] We test abnormal returns over event window [-1, 0] to deal with the potential information leakage.

of the ruling was larger than (and not limited to) that observed in the ruling day abnormal returns (Table 1), while showing that the result is not driven by any concurrent events on the event (ruling) day.

Next, we further examine whether our result is robust to alternative specifications. We first discuss our empirical design for the tests and then report the results.

We estimate the following empirical model in our regressions:

$$\text{Abnormal Return}_i = \alpha_i + \beta \times \text{E} - \text{Tailers}_i + \gamma \times \text{Hybrids}_i + \delta \text{Z}_i + \varepsilon_i \quad (4)$$

where i indexes firms; $\text{E} - \text{Tailers}_i$ is a dummy variable which equals 1 if the company is an E-tailer, and 0 otherwise; Hybrids_i is a dummy variable which equals 1 if the company is a hybrid retailer, and 0 otherwise; Z_i is a vector of control variables that could affect the abnormal return. This specification would imply that the coefficients β and γ would indicate how the abnormal returns of E-tailers and hybrids compare to B-tailers.

Table II: Control Variables

	B-tailers	Hybrids	E-tailers
Sales	7.535	8.697	6.947
Leverage	0.213	0.229	0.185
ROE	0.104	0.131	0.402
BE/ME	0.618	0.613	0.317
N	35	60	11

The vector of control variables includes total sales (Sales), financial leverage (Leverage), profitability (ROE), and book-to-market ratio (BE/ME). Sales is natural logarithm of firm's total sales. Leverage is total debt divided by total assets. ROE is earnings divided by last year's book value of equity. BE/ME is book value of equity divided by market value of equity. ROE is winsorized at the 2.5 and 97.5 percentiles to control for outliers. Table 2 shows the descriptive statistics of control variables for B-tailers, hybrids and E-tailers respectively. It indicates that E-tailers tend to have less sales, less leverage, higher ROE and lower BE/ME.

Our empirical test result is shown in Table 3. In Model 1, we use the percentage abnormal returns at Day 0 calculated based on the Fama-French 3-factor model as our dependent variable. Consistent with our previous result, we find that after controlling for firm characteristics, the abnormal return of E-tailers is 2.978% lower than that of B-tailers (coefficient β = -2.978). In addition, the abnormal return of hybrids is 0.931% lower than that of B-tailers (γ = -0.931). Furthermore, the results are consistent whether we use the abnormal return based on the Carhart 4-factor model (Model 2), or use the abnormal return during the event window [-1, 0] in Model 3 and 4.

Admittedly, the power of this study is constrained by the small sample size, more so for the E-tailers group. This can be attributed to the small population of large, publicly traded retailers in the US, which was the focus of our study.

Table III: Determinants of Abnormal Returns

	Abnormal Return [0]		Abnormal Return [-1, 0]	
VARIABLES	(1)	(2)	(3)	(4)
E-tailers	-2.978***	-3.027***	-2.818**	-2.884**
	(-3.511)	(-3.565)	(-2.273)	(-2.317)
Hybrids	-0.931*	-0.910*	-1.553*	-1.525*
	(-1.728)	(-1.687)	(-1.971)	(-1.928)
Sales	0.053	0.057	0.267	0.273
	(0.325)	(0.351)	(1.125)	(1.145)
Leverage	0.192	0.242	-0.961	-0.895
	(0.163)	(0.206)	(-0.560)	(-0.519)
ROE	0.034	0.030	-0.130	-0.135
	(0.118)	(0.106)	(-0.314)	(-0.324)
BE/ME	0.263	0.326	0.441	0.526
	(0.530)	(0.657)	(0.609)	(0.722)
Constant	1.692	1.681	0.909	0.894
	(1.242)	(1.233)	(0.457)	(0.447)
Observations	106	106	106	106
R-squared	0.127	0.133	0.083	0.086

Notes: Dependent variable is the abnormal return on day 0 or day [-1, 0]. Independent variables are defined in Table 2. t-statistics are shown in parentheses. ***, ** and * indicate significance at 1%, 5% and 10% respectively.

4. Conclusion

In this paper, we examine the impact of a tax rule change on the retailing industry. Our findings are consistent with the notion that the supreme court ruling reduced the advantage that online retailers had over local retailers arising from a tax loophole. Specifically, we find that the magnitude of this effect as reflected in the capital markets was economically large and significant. More broadly, our results have important policy implications. Increasingly, we have been witnessing the rapid growth of large and dominant online retailers such as Amazon (and traditional brick-and-mortar retailers such as Target and Walmart that are quickly expanding their online presence) which come at the expense of smaller retailers. Based on our data, such trends will not be overturned by the Wayfair decision. As such, it will be up to the policy makers to shape their policies accordingly – whether it be through regulation, taxes, or other legislations – to ensure that fair competition thrives in the markets.

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