

**THE AMAZON TAX & E-TAILER SUPPLY CHAINS: AN EMPIRICAL STUDY OF
INTERNET TAX LAW USING STRATEGIC LOCATION MODELING**

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Introduction

As online shopping became a normal mode of commerce, traditional brick-and-mortar stores found themselves at a competitive disadvantage with major e-tailers (e.g. Amazon.com) that lacked physical store fronts. This competitive disadvantage stemmed not only from the additional costs of maintaining a physical presence, but also from issues of taxation, particularly collection and remittance of sales taxes on goods purchased on the internet by consumers. Recognition of this problem by state legislatures and state tax authorities prompted a surge of interest in finding ways to capture this ever-growing, yet elusive revenue base. In 2008, New York became the first state to enact a tax law specifically designed to capture this lost revenue on internet purchases by mandating collection of sales taxes by the e-tailer.¹ The rules set forth by the legislature in New York's new internet sales tax law, later referred to as the "Amazon Tax", caused a great deal of controversy. Balancing U.S. Constitutional and other federal legal obligations with online sales tax collection or use tax reporting efforts proved tricky for state law makers and the chances for tremendous revenue gains appeared to be slipping away...until the arrival of a ruling by the New York Court of Appeals upholding and encouraging the proliferation of other 'Amazon Tax' laws.

While some commentators discussed the tax and constitutional issues surrounding the 'Amazon Tax' in relation to the Amazon and Overstock cases coming out of New York's courts, this article will focus on how variations on the 'Amazon Tax' implemented in numerous states and the overall movement towards legislatively mandated internet state sales tax collections or use tax reporting by e-tailers impact e-tailer strategic supply chain and distribution channel decisions. The particular focus of this article is on Amazon.com, Inc., linking analysis of Amazon's supply and distribution chains to law and policy implementation as they relate to internet sales and use taxation.

I. Testing Hypotheses for Amazon's United States Distribution Center Location Strategy

The strategic logistics decisions of e-tailers, such as Amazon.com, Inc., in their pursuit to provide excellent performance and create a competitive advantage for the company, are vulnerable to legislation aimed at mandatory collection and/or reporting of state sales and use taxes for e-commerce orders. Jeff Bezos, the founder of Amazon, based Amazon in Seattle partly to maximize the tax advantage.² More specifically, and to highlight Bezos' strategic thinking, he stated "physical location is very important for the success of a virtual business."³ In both a domestic and international business operations context, tax legislation and tax policies can play a

¹ N.Y. State Tax Law § 1101(b)(8)(vi); *See Overstock.com, Inc. v. New York State Dep't of Taxation & Fin.*, 20 N.Y. 3d 586, 590, 987 N.E.2d 621, 622 (2013).

² Peter Elkind and Doris Burke, *Amazon's (not so secret) War on Taxes*, FORTUNE (May 23, 2013), <http://fortune.com/2013/05/23/amazons-not-so-secret-war-on-taxes/>.

³ Michael Mazerov, *Proposed "Business Activity Tax Nexus" Legislation Would Seriously Undermine State Taxes on Corporate Profits And Harm the Economy*, CENTER ON BUDGET AND POLICY PRIORITIES, Feb. 26, 2014, at 13 <http://www.cbpp.org/files/6-24-08sfp.pdf>.

significant role in a business' strategic decision-making. The purpose of this article is to empirically evaluate the relationship between internet sales and use tax legislation and the strategic supply chain decisions of one of the largest e-tailers, Amazon.com, Inc. to see if the data shows inefficient alterations in Amazon.com, Inc.'s supply chain system aligning with the passage of internet sales and use tax legislation targeting e-tailers' current business operations. The strategic locational decisions of Amazon's distribution centers are vital to Amazon's profitability, affected by their ability to capture the market and offer high service levels (as of May 201 Amazon offers same-day delivery to 28 metro areas⁴) and costs (the amortized investments in new distribution centers ("DCs"), local fulfillment costs, taxes, and transportation costs).⁵

We examine two hypotheses to address questions that e-tailers, like Amazon.com, Inc., consider when opening up distribution centers in light of the changing internet sales and use tax law landscape: 1) whether such e-tailers should operate under the assumption that collecting and/or reporting online sales and use tax everywhere is inevitable or 2) whether such e-tailers should continue to strategically position themselves by cutting internet sales and use tax 'sweetheart' deals and/or strategically fight such legislation in major supply chain hubs. These questions are particularly important to e-tailers, such as Amazon.com, Inc., due to the aforementioned profitability and distribution infrastructure investment decisions. More specifically, the approach of each hypothesis is outlined as:

Hypothesis (1): Amazon's strategic location decisions focus on enabling faster service, including same-day delivery, of goods while supporting convenience and a diverse selection to maintain a critical part of Amazon's appeal. Distribution center decisions, specifically the number of distribution centers and their location in the network, affect the competitive distribution center costs and optimum customer response. For example, many Amazon products purchased by Miami, FL consumers come from a warehouse 1000 miles away in Memphis, TN, making the logistics difficult for "next-day" or "two-day" deliveries.⁶ Amazon expanded into states that legislated mandatory collection of internet sales tax and/or reporting of use for use tax purposes (e.g. Amazon must collect the state sales tax from the consumer at time of purchase), such as Texas and California, finding that sales still increased.⁷ The strategic value of select locations, providing lower shipping costs and shorter delivery times, in Amazon's overall supply chain may have proven too high to consider abandonment or significant supply chain alteration as a response to internet sales and use tax legislation. Tompkins International reported that the strategic DC location decision to service customers has evolved from just considering factors such as transportation costs and taxes, to the level of service that can be provided in an area.⁸ Amazon is investing to provide faster service to its customers by building

⁴ Amazon.com, Inc., *Order with Prime FREE Same-Day Delivery*, AMAZON.COM (May 10, 2016), https://www.amazon.com/gp/help/customer/display.html/ref=hp_left_v4_sib?ie=UTF8&nodeId=201631620.

⁵ See generally SUNIL CHOPRA AND PETER MEINDL, *SUPPLY CHAIN MANAGEMENT: STRATEGY, PLANNING, OPERATION* (2001).

⁶ Michael Van Sickler, *Florida alone, not any tax break, could lure Amazon to Hillsborough*, TAMPA BAY TIMES (June 18, 2013), <http://www.tampabay.com/news/business/amazon-doesnt-need-tax-incentives-yet-hillsborough-officials-are-ready-to/2127328>.

⁷ *Id.*

⁸ Bob Trebilcock, *Supply Chain: Amazon is Changing the Rules of the Game*, MODERN MATERIALS HANDLING (Dec. 14, 2012), http://www.mmh.com/article/supply_chain_amazon_is_changing_the_rules_of_the_game.

DCs near major metropolitan areas (in 2004, 38% of Amazon's fulfillment capacity was less than 200 miles from a major metropolitan area compared to 79% today).⁹

Hypothesis (2): Amazon's strategic location decisions for expanding physical operations into more states altered to deter the tax burden costs at the expense of supply chain efficiency. Not incurring sales and use tax obligations and competing on low prices provides Amazon with a 10% advantage where profit margins are already thin.¹⁰ As states pass legislation requiring Amazon to collect sales tax or prepare use tax reports, strategic supply chain decisions may skew towards inefficient distribution systems when side deals on the tax issues cannot be arranged. Currently, only items sold by Amazon.com, Inc., or its subsidiaries, and shipped to destinations in twenty-seven states are subject to tax.¹¹ Residents in New Jersey, Virginia, Nevada, and Florida became subject to the tax in 2014.¹² To alleviate this burden, Amazon made agreements with select states that require collection by Amazon of e-commerce sales tax or require use tax reporting by the retailer, to build warehouses in exchange for delayed implementation of compliance obligations (in New Jersey, for instance, Amazon promised to build two distribution centers, hiring more than 1,500 full-time employees and thousands of temporary and construction workers, in exchange for not collecting sales tax until July 2013).¹³ Aside from distribution centers, other investments by Amazon, such as customer service centers, were included in some deals with States; however, our data analysis focuses specifically on the deals involving new distribution center locations emerging from the deals between Amazon and the respective States.

To examine the hypotheses, we will first survey the landscape of the internet sales tax legislation that will impact Amazon's strategic decision-making process. Then, by collecting empirical data (i.e. the locations of Amazon's distribution centers that are opened up over time) we will compare these strategic location choices to the optimal choice that would enable optimal (fastest) speed of delivery of products to consumers to quantify if the actual impact of Amazon's strategic locational choices are based on speed of delivery or cost minimization (deter the tax burden).

II. Case Law Origins and the Evolution of Amazon Internet Sales and Use Taxation

A. Background

Prior to 2008 (when the New York internet sales tax became law), consumers across the United States were able to purchase goods without sales tax being collected at time of purchase from online merchants so long as those online merchants lacked a physical presence in the state where the consumer lived.¹⁴ This concept of physical presence or 'nexus' as later applied in

⁹ *Id.*

¹⁰ Robert W. Wood, *Amazon No Longer Tax-Free: 10 Surprising Facts As Giant Loses Ground*, FORBES (Aug. 22, 2013), <http://www.forbes.com/sites/robertwood/2013/08/22/amazon-no-longer-tax-free-10-surprising-facts-as-giant-loses-ground/>.

¹¹ Amazon.com, Inc., *About Sales Tax*, AMAZON.COM (January 5, 2016), <http://www.amazon.com/gp/help/customer/display.html?nodeId=468512> (Alaska is a special case whereby only items sold as Amazon Warehouse Deals and shipped to Alaska are taxed locally).

¹² Greg Bensinger, *Amazon, Web Sales Taxes Coming to Florida*, WALL STREET JOURNAL (June 14, 2013), <http://blogs.wsj.com/digits/2013/06/14/amazon-web-sales-taxes-coming-to-florida/>.

¹³ *Id.*

¹⁴ N.Y. State Tax Law § 1101(b)(8)(vi).

future cases involving attempts to force sales tax collection by out-of-state retailers, evolved from a late 1960s United States Supreme Court case involving attempts by various States to tax purchases from mail-order catalogs.¹⁵ The key issue in this line of cases often involved violations of the Commerce Clause, and to a certain extent, the Due Process Clause of the United States Constitution.

Following the passage of the New York Amazon law, the passage of additional variants of ‘New York Style Amazon Laws’ in multiple states prompted decisional conflict among the various courts charged with hearing the matters. However, some of these courts chose to approach the clones of New York’s Amazon law from a different angle to either validate it (such as occurred in Colorado) or to invalidate it (such as occurred in Illinois). This left it up to Amazon.com, Inc. and other such companies to attempt to negotiate internet sales and use incentive tax deals with states on a state-by-state bilateral basis in an effort to maintain respective competitive advantages (i.e. Amazon’s supply chain efficiency) while fighting contentious battles in the courts.

B. Commerce Clause, Due Process Clause, and First Amendment Issues

National Bellas Hess, Inc. v. Department of Revenue of Illinois (“*Bellas*”) is arguably the closest legal relative to where courts and policymakers find themselves today in attempting to reconcile Constitutional obligations with the need to collect tax revenue.¹⁶ The *Bellas* case involved a mail order company with its principal place of business in Kansas City, Missouri that was required by the Illinois Department of Revenue through an Illinois Supreme Court order to collect and pay use taxes to Illinois despite *Bellas* lacking outlets, warehouses or sales representatives in Illinois.¹⁷ *Bellas*’ contacts with the State of Illinois were limited to the postal system or common carrier for delivery of goods purchased by customers from its mail order catalog.¹⁸ To a certain extent, *Bellas* effectively was the e-tailer equivalent for its time period. The government of Illinois asserted that this solicitation of customers who lived in Illinois via mail order catalog by *Bellas* was the equivalent of maintaining a place of business in the state under the 1965 Illinois Revenue Statute Chapter 120 Section 439.2.¹⁹ The United States Supreme Court sided with *Bellas*’ claim that the Illinois tax collection obligation created an unconstitutional burden on interstate commerce, specifically stating:

Indeed, it is difficult to conceive of commercial transactions more exclusively interstate in character than the mail order transactions here involved. And if the power of Illinois to impose use tax burdens upon National [*Bellas*] were upheld, the resulting impediments upon the free conduct of its interstate business would be neither imaginary nor remote.²⁰

The next major evolution in the *Bellas* lineage of cases emerged from the decision of a 1977 Supreme Court case, *Complete Auto Transit v. Brady* (“*Auto Transit*”), involving sales tax on the delivery services of General Motors vehicles manufactured outside of the state charging the tax.²¹

¹⁵ *National Bellas Hess v. Department of Revenue*, 386 U.S. 753 (1967).

¹⁶ *Id.*

¹⁷ *Id.* at 754.

¹⁸ *Id.* at 754-55.

¹⁹ *Id.* at 755.

²⁰ *Id.* at 759.

²¹ *Complete Auto Transit, Inc. v. Brady*, 430 U.S. 274 (1977).

The *Auto Transit* case clarified the validity of a non-discriminatory state tax imposed on a business with a substantial nexus to the tax imposing state.²²

Twenty-five years following the *Bellas* decision, in *Quill Corp. V. Heitkamp* (“*Quill*”), the Supreme Court found itself facing another mail order catalog case.²³ *Quill* involved the imposition of a use tax collection obligation on an out-of-state company, Quill Corporation, for goods it sold that would be used within the state of North Dakota. The Supreme Court in *Quill* made an important distinction and clarification between the ‘minimum contacts’ requirements of the Due Process Clause and the ‘substantial nexus’ requirement of the Commerce Clause. More specifically, the Supreme Court stated that the Due Process requirement was to provide “notice or fair warning”, while the Commerce Clause’s nexus requirement emerged from “concerns about the effects of state regulation on the national economy.”²⁴ Additionally, it was made clear that although a company, such as the Quill Corporation, may have minimum contacts to meet Due Process Clause requirements it could still lack substantial nexus and thus disallow for the validity of the use tax measures in question.²⁵

This distinction and differentiation by the court between Due Process Clause requirements and Commerce Clause requirements refuted the State of North Dakota’s claim that the nexus requirements imposed by both clauses were the same.²⁶ In reaching its decision, the Supreme Court highlighted the four-factor test developed in the *Auto Transit* case: “we will sustain a tax against a Commerce Clause challenge so long as the “tax 1. is applied to an activity with a substantial nexus with the taxing State, 2. is fairly apportioned, 3. does not discriminate against interstate commerce, and 4. is fairly related to the services provided by the State.”²⁷ Collectively with the established earlier jurisprudence stemming from the *Bellas* case lineage, the Supreme Court in *Quill* presumptively recognized a bright-line physical-presence requirement to create substantial nexus for businesses similar to mail-order catalog companies with operations like Quill Corporation.

A subsequent attack on this presumptive bright-line test came from the State of New York, when it passed its ‘Amazon law’ which created its own presumption that out-of-state Internet retailers (e-tailers) are in-state vendors even without a physical presence in the state. New York’s ‘Amazon law’ went through extensive litigation brought by Amazon.com, Inc. and ultimately ended with a petition for a Writ of Certiorari filed on August 23, 2013, that was denied on December 2, 2013.²⁸ The questions presented in the filed Writ of Certiorari go back to the original concerns over tax collection obligations imposed in violation of the Commerce Clause when there is no physical presence in New York and a new take on Due Process Clause violation – New York’s adoption of an effectively irrefutable presumption that the requirements for taxation under the Commerce Clause are satisfied.²⁹

Other Constitutional problems for Amazon tax collection efforts emerged in the form of purchase information demands for tax reporting. In December of 2009, the North Carolina Department of Revenue requested from Amazon ““all information for all sales to customers with

²² *Id.* at 278-80.

²³ *Quill Corp. v. Heitkamp*, 504 U.S. 298 (1992).

²⁴ *Id.* at 309-10.

²⁵ *Id.*

²⁶ *Id.* at 311.

²⁷ *Auto Transit*, 430 U.S. at 279.

²⁸ *Amazon.com LLC v. N.Y. Dep’t of Taxation and Fin.*, cert. denied, 134 S.Ct. 682 (2013).

²⁹ *Amazon.com LLC v. N.Y. Dep’t of Taxation and Fin.*, 987 N.E.2d 621 (N.Y. App. Div. 2013), petition for cert. filed, (U.S. Aug. 23, 2013) (No. 13-259).

a North Carolina shipping address by month in an electronic format for all dates between August 1, 2003, and February 28, 2010.”³⁰ Amazon.com, Inc. and the American Civil Liberties Union objected to supplying detailed customer information along with their purchases and filed suit on First Amendment grounds.³¹ District Court Judge Marsha Pechman agreed with Amazon and the ACLU stating in her opinion granting summary judgment- “The First Amendment protects a buyer from having the expressive content of her purchase of books, music, and audiovisual materials disclosed to the government. Citizens are entitled to receive information and ideas through books, films, and other expressive materials anonymously.”³²

Despite the invitation towards litigation surrounding the New York ‘Amazon tax’, many states hoping for additional sales tax revenues adopted, with mixed success, duplicates or slight variations on the ‘Amazon tax’; many states found themselves facing litigation and/or small e-business political pushback as a result. However, the most significant strategic outcome of the continued push towards internet sales taxation resulted in alterations of Amazon’s investment decisions for their supply chain operations in several States. By targeting Amazon through sales and use tax laws, many States were faced with a choice to either litigate or broker a deal to avoid losing Amazon’s current or proposed engagements with the state.

C. Amazon Tax Clone Laws, Affiliate Nexus, and Associated Jurisprudence

Attempts by other state governments to duplicate New York’s ‘Amazon tax’ met with mixed success. Eight states in particular have witnessed their initial (and occasionally successive) legislative attempts either fail outright (Idaho, Louisiana, Mississippi and Nebraska), get vetoed by their governor (Hawaii and Ohio) or face major court challenges (Colorado and Illinois).³³ In the two states where local courts addressed a variation on the Amazon tax law, Colorado and Illinois, there emerged two divergent opinions on the validity of the law, with one court upholding it and the other invalidating it.³⁴ In late 2013, the Illinois Supreme Court, in a 6-to-1 decision in *Performance Mktg. Ass’n, Inc. v. Hamer* (“*Hamer*”), found that the Internet Tax Freedom Act (the “ITFA”) preempted Illinois’ state Amazon tax law.³⁵

The ITFA emerged in 1998 to address concerns regarding restriction on internet access through the imposition of potential internet access taxes.³⁶ Initially, the law imposed a three year moratorium on the imposition of any internet access taxes.³⁷ Five internet access tax moratorium extensions later, the ITFA discussion continues.³⁸ The most recent extension, signed into law as part of the Consolidated Appropriations Act of 2016 by President Obama, extended the ITFA

³⁰ *Amazon.com LLC v. Kenneth R. Lay*, 758 F. Supp.2d 1154, 1159 (W.D. Wash. 2010).

³¹ *Id.*

³² *Id.* at 1167.

³³ *See infra* notes 35 and 54.

³⁴ *Id.*

³⁵ *Performance Mktg. Ass’n, Inc. v. Hamer*, 998 N.E.2d 54 (Ill. Oct. 18, 2013).

³⁶ Title XI of P.L. 105-277, the Omnibus Appropriations Act of 1998.

³⁷ *Id.*

³⁸ The ITFA was extended first in 2001, then again in 2004, in 2007 and two more times in 2014; *see* H.R. 1552, 107th Cong. (2001) (enacted)[extending the ITFA’s expiration date through Nov. 1, 2003]; *see also* Internet Tax Nondiscrimination Act, Pub. L. No. 108-435, 118 Stat. 2615 (2004) [extending the ITFA’s expiration date through Nov. 1, 2007]; *see also* H.R. 3678, 110th Cong. (2007) (enacted) [extending the ITFA’s expiration date through October 2014]; *see also* H.R.J. Res. 124, 113th Cong. (2014) [extending the ITFA’s expiration date through Dec. 11, 2014]; *see also* H.R. 83, 113th Cong. (2014) (enacted) [extending the ITFA’s expiration date through September 2015]; *see also* H.R. 719, 114th Cong. (2015) (enacted)[extending ITFA’s expiration through December 2015].

through October 16, 2016.³⁹ In December of 2015, Senator Dick Durbin (Democrat – Illinois) spoke openly in opposition of adopting a permanent ITFA until the House of Representatives votes on one of the many variations of the Marketplace Fairness Act.⁴⁰ Senator Durbin’s statements about taking some action on the Marketplace Fairness Act prior to consideration of making permanent the ITFA undoubtedly originate from the internet sales and use tax issues addressed by the Illinois Supreme Court in Durbin’s home State. In spite of Senator Dick Durbin’s protests, the ITFA was made permanent (referred to as “PITFA”) in February 2016 as part of the Trade Facilitation and Trade Enforcement Act of 2015.⁴¹

Although internet access taxes (as opposed to internet sales and use taxes) formed the focus behind initial creation of the ITFA, the basis for the Illinois Supreme Court decision in *Hamer* rested on a clause in the ITFA generally prohibiting States from imposing discriminatory taxes on electronic commerce.⁴² Specifically, the Illinois Supreme Court considered the disparity in tax treatment between web retailers who sell through links on IL websites (establishing “click-through-nexus”⁴³) and web retailers who simply advertise through print or broadcast to sell.⁴⁴ The Illinois Amazon tax law obligated retailers to collect sales tax if they established click-through-nexus (the first scenario mentioned) while allowing the print/broadcast web retailers to escape the sales tax collection obligation.⁴⁵ Thus, the Illinois Supreme Court stated “by singling out retailers with Internet performance marketing arrangements **for use tax collection** [emphasis added], the Act imposes discriminatory taxes within the meaning of the ITFA.”⁴⁶ Unfortunately, for e-tailers hit by the 2011 Illinois Amazon tax law, the decision arrived a bit too late as two-thirds of Amazon affiliate businesses either went out of business or left the state of Illinois (Performance Marketing Association, 2013).⁴⁷ After the Illinois Supreme Court’s ruling on Illinois’ version of an Amazon tax law, the Illinois legislature changed their now invalidated tax law and removed specific references to the internet along with including coverage for print and broadcast to address the provisions of the earlier law impacted by the Illinois Supreme Court’s ruling.⁴⁸

In contrast, a few months prior to the *Hamer* case, the 10th Federal Circuit Court of Appeals lifted an injunction (imposed earlier in March 2012) prohibiting enforcement of Colorado’s Amazon tax law in *Direct Marketing Ass’n v. Brohl* (“Brohl”).⁴⁹ The 10th Circuit’s reasoning behind the decision to lift the injunction involved the Federal Tax Injunction Act’s prohibition on federal courts’ right to suspend state tax laws.⁵⁰ The Tax Injunction Act (the

³⁹ See H.R. 2029, 114th Cong. (2015).

⁴⁰ John Eggerton, *Durbin Leads ITFA Pushback*, MULTICHANNEL NEWS (Dec. 15, 2015), <http://www.multichannel.com/news/congress/durbin-leads-itfa-pushback/395978> (For an in-depth discussion on the Marketplace Fairness Act see *infra* Section C on pp. XX).

⁴¹ See *infra* note 75 and Section D.

⁴² *Hamer*, 998 N.E.2d at 59 ¶ 23, *supra* note 35.

⁴³ *Id.* at 59 ¶¶ 21-23.

⁴⁴ *Id.* at 59 ¶ 22.

⁴⁵ *Id.* at 59 ¶¶ 21-23.

⁴⁶ *Id.* at 59 ¶ 19.

⁴⁷ Brian Littleton, *Performance Marketing Association Wins Suit Challenging Validity of Illinois Affiliate Nexus Law: Supreme Court Upholds 2012 Circuit Court Decision*, PERFORMANCE MARKETING ASSOCIATION (Oct. 18, 2013), <http://jobs.thepma.org/2013/10/18/press-release-illinois-supreme-court-upholds-pma-suit/>.

⁴⁸ Tim Landis, *State Goes After Unpaid Sales Tax*, THE STATE JOURNAL-REGISTER (Jan. 18th, 2015), <http://www.sj-r.com/article/20150118/NEWS/150119498/0/SEARCH/?Start=1>.

⁴⁹ *Direct Marketing Ass’n v. Brohl*, 735 F. 3d 904 (10th Cir. 2013), *petition for cert. filed* (U.S. Feb. 24, 2014) (No. 13-1032).

⁵⁰ *Id.*

“TIA”) states “[t]he district courts shall not enjoin, suspend or restrain the assessment, levy or collection of any tax under State law where a plain, speedy and efficient remedy may be had in the courts of such State.”⁵¹ According to the 10th Circuit Court’s interpretation of the TIA, state tax law issues should be solved in state courts first prior to a federal court suspending enforcement of such laws through an injunction.⁵² It is significant to note that in reaching the decision, the 10th Circuit also dismissed the Commerce Clause claims of the case.⁵³ The United States Supreme Court agreed to hear the Direct Marketing Association’s appeal on the question:

Whether the TIA bars federal court jurisdiction over a suit brought by non-taxpayers to enjoin the informational notice and reporting requirements of a state law that neither imposes a tax, nor requires the collection of a tax, but serves only as a secondary aspect of state tax administration?⁵⁴

On March 3rd, 2015, the United States Supreme Court unanimously reversed the 10th Circuit Court’s decision stating that Direct Marketing Association’s suit is not barred by the TIA.⁵⁵ The decision rested on interpretation of the terms “assessment”, “levy”, and “collection” within the context of the Federal Tax Code as not inclusive of “informational notices or private reports of information relevant to tax liability.”⁵⁶ This decision may allow other affiliates to adopt the Direct Marketing Association’s approach to prevent enforcement attempts by States of the mandatory use tax reporting components of Amazon-styled tax laws for internet transactions. However, the decision did not fully settle the matter. The Supreme Court remanded the case to the 10th Circuit for further proceedings on the merits of the claims now that the suit was no longer bared by the TIA.⁵⁷

On remand to the 10th Circuit, the court adopted a very different approach in interpreting limitations imposed on internet sales-use taxation by the Supreme Court’s decision in *Quill*.⁵⁸ The Direct Marketing Association argued that Colorado’s Amazon tax variant requiring use tax notice and reporting “unconstitutionally discriminates against and unduly burdens interstate commerce”; this argument was very much in alignment with the *Quill* derived case law on internet sales-use tax issues.⁵⁹ Thus, the overall focus on remand centered on *Quill* and the Dormant Commerce Clause (whether Colorado’s Amazon-styled tax law discriminates against or places an undue burden on interstate commerce in an area where Congress has remained silent).⁶⁰

The 10th Circuit determined that *Quill* “applies narrowly to sales and use tax collection.”⁶¹ Specifically, the court placed emphasis on the concept of collecting taxes as opposed to an obligation of reporting that taxes may be owed. Thus, the court determined that the question of whether Colorado’s law had a discriminatory effect on interstate commerce depended on the scope of *Quill*.⁶² Although the Colorado law provided the option for out-of-state retailers to either collect and remit sales tax or engage in use tax notice reporting, the court

⁵¹ 28 U.S.C. § 1341.

⁵² See generally *Brohl*, 735 F. 3d at 904.

⁵³ *Id.*

⁵⁴ *Direct Marketing Association v. Brohl*, 575 U. S. ____ (2015), *Question Presented*, <http://www.supremecourt.gov/qp/13-01032qp.pdf>.

⁵⁵ *Direct Marketing Ass’n v. Brohl*, 575 U. S. ____ (2015).

⁵⁶ *Brohl*, 575 U. S. ____ (2015) at 5-9 (slip opinion).

⁵⁷ *Brohl*, 135 S. Ct. at 1127, 575 U. S. ____ (2015) [slip opinion page 13].

⁵⁸ *Quill Corp. v. North Dakota*, 504 U.S. 298 (1992).

⁵⁹ *Direct Marketing Ass’n v. Brohl*, No. 12-1175 at 4 (10th Cir., Feb. 22, 2016).

⁶⁰ *Id.* at 11-12.

⁶¹ *Id.* at 13.

⁶² *Id.* at 28.

found that this option alone does not render Colorado's law non-discriminatory.⁶³ Ultimately, however, the court determined that *Quill* only extends protection for out-of-state retailers without a physical presence in the state from an obligation to **collect** [emphasis added] sales tax.⁶⁴

Since DMA could not provide sufficient evidence that the Colorado use tax notice and reporting requirements were more burdensome than what in-state retailers must comply with, the court determined the law was non-discriminatory.⁶⁵ Further, the court found the Colorado law did not create an undue burden because it "does not require out-of-state retailers to assess, levy, or collect use tax on behalf of Colorado."⁶⁶ This last component originated from the case's earlier history when the Tax Injunction Act played a significant role.⁶⁷ The Supreme Court made it quite clear in their ruling prior to remand, that the TIA is linked to tax acts involving assessment, levy, or collection, not tax notice and reporting obligations.⁶⁸

As the battle over internet sales and use tax continues into 2016, state governments started adopting more interesting and aggressive approaches to assert nexus for state tax purposes over e-tailers. Several cases consolidated and currently pending before the Ohio Supreme Court, rest on a very interesting interpretation of establishing nexus for e-tailers.⁶⁹ The Ohio Tax Commissioner argues that the use of software cookies by companies, specifically Crutchfield's, but applicable to companies like Newegg.com or Amazon.com, Inc., constitutes sufficient physical presence in Ohio to establish nexus.⁷⁰ The basis for this argument originates from the treatment of software as tangible property under Ohio state law.⁷¹ Such interesting and creative attempts at establishing nexus for purposes of internet sales and use tax demonstrate a growing effort by states to up their enforcement and collection efforts. The *Crutchfield* case currently pending before the Ohio Supreme Court as of May 2016 could have tremendous implications for the nexus issues associated with internet sales and use tax enforcement and collection efforts.

D. PITFA, MFA, and the RTPA - Relevance to Strategic Distribution Location Decision-Making

Prior to the Supreme Court's TIA *Brohl* decision, the Supreme Court denied Amazon's writ of certiorari for New York's Amazon internet sales tax law (the progenitor of other States' Amazon tax law variations).⁷² The ruling placed great reliance on Congress (as the Supreme Court both implicitly and explicitly made clear) to enact federal legislation that will comprehensively address internet sales and use taxation. This resulted in a very fractured jurisprudential landscape due to differing State supreme court decisions on Amazon-style internet sales and use tax laws and the U.S. Supreme Court's passing the buck to Congress set the stage for a drawn out political battle.⁷³

⁶³ *Id.* at 28-29.

⁶⁴ *Id.* at 29.

⁶⁵ *Id.* at 31.

⁶⁶ *Id.* at 34.

⁶⁷ *Supra* Brohl, note 56.

⁶⁸ *Id.* at 1131.

⁶⁹ See *Crutchfield Inc. v. Testa*, Case No. 15-0386 (Ohio filed Mar. 6, 2015); *Newegg Inc. v. Testa*, Case No. 15-0483 (Ohio filed Mar. 25, 2015); *Mason Cos. Inc. v. Testa*, Case No. 15-0794 (Ohio filed May 19, 2015).

⁷⁰ *Crutchfield Inc. v. Testa*, Case No. 15-0386 (Ohio filed Mar. 6, 2015), APPELLEE TAX COMMISSIONER'S MERIT BRIEF (Oct. 20, 2015) at 43-46, http://supremecourt.ohio.gov/pdf_viewer/pdf_viewer.aspx?pdf=779669.pdf.

⁷¹ *Id.* at 43-44.

⁷² *Amazon.com LLC v. N.Y. Dep't of Taxation and Fin., cert. denied*, 134 S.Ct. 682 (2013).

⁷³ *Id.*

In mid-June 2014, the “Permanent Internet Tax Freedom Act” (“PITFA”) successfully moved out of the House Judiciary Committee to be considered by the House of Representatives.⁷⁴ In July of 2014, the House passed the PITFA and the bill moved to the Senate where it died prior to further consideration by the 113th Congress.⁷⁵ The PITFA bill was specifically designed to act as a “[p]ermanent moratorium on Internet access taxes and multiple and discriminatory taxes on electronic commerce.”⁷⁶ Despite failing to become law in 2014, PITFA emerged once again in early 2015 and, once again, failed to become law.⁷⁷ Finally, in February of 2016, PITFA became law as a part of the Trade Facilitation and Trade Enforcement Act of 2015.⁷⁸

Although the primary purpose of the PITFA bill is based on preventing states from enacting taxes on internet access, the additional language covering “discriminatory taxes on electronic commerce” broadly encompasses all types of internet taxation.⁷⁹ This last component is specifically relevant to consideration of internet tax impact on supply chain models. For example, the Illinois Supreme Court in *Hamer* utilized this additional language to reach their conclusion that the ITFA preempted the state of Illinois’ Amazon internet sales tax law.⁸⁰ Passage of PITFA without any additional language specifically related to the Marketplace Fairness Act, and consequently internet sales tax issues, could provide for additional arguments against attempts by states trying to enforce an Amazon tax style law.⁸¹ A state supreme court already used the ITFA to preempt a state’s internet sales tax.⁸² This also possibly explains the previous apprehension of proponents of the Marketplace Fairness Act from considering PITFA unless the Marketplace Fairness Act was voted on by the House of Representatives first.⁸³

Unlike PITFA, the Marketplace Fairness Act specifically addresses the internet sales tax issues. The version of the “Marketplace Fairness Act” (the “MFA”) that passed the Senate in 2013 faced opposition due to perceived deficiencies in how it approaches internet sales and use tax collection.⁸⁴ One of several major concerns regarding the MFA involves the regulatory burden associated with granting the various States so much control over remote e-tailers (or “remote sellers” as the term is defined in the MFA).⁸⁵ Several modifications to the MFA aimed at addressing these concerns found their way into the version of the bill passed by the Senate.

Individuals and groups opposed to the MFA, including Texas Senator Ted Cruz, argue that for small businesses the consequences of the regulatory compliance burdens imposed by the

⁷⁴ Permanent Internet Tax Freedom Act of 2014, H.R. 3086, 113th Cong. §2 (2d Sess. 2014) [hereinafter “PITFA”].

⁷⁵ *Id.*

⁷⁶ *Id.* at §2.

⁷⁷ Permanent Internet Tax Freedom Act of 2015, H.R. 235, 114th Cong. (1st Sess. 2015); *see also* Internet Tax Freedom Forever Act of 2015, S. 431, 114th Cong. (1st Sess. 2015) [a related bill, referred to congressional committee on Feb. 10th, 2015, that would permanently extend the Internet Tax Freedom Act].

⁷⁸ Trade Facilitation and Trade Enforcement Act of 2015, P.L. 114-125 (02/24/2016) [hereinafter “TFTEA”].

⁷⁹ *PITFA*, *supra* note 56, at §2.

⁸⁰ Performance Mktg. Ass’n, Inc. v. Hamer, 998 N.E.2d 54 (Ill. Oct. 18, 2013).

⁸¹ *See* TFTEA, *supra* note 78.

⁸² *Hamer*, 998 N.E.2d at 59 ¶ 23, *supra* note 35.

⁸³ *See* Eggerton, *supra* note 40 (referring to Senator Dick Durbin of Illinois, a proponent of the Marketplace Fairness Act, specific statements to this effect in December of 2015).

⁸⁴ Marketplace Fairness Act of 2013, S. 743, 113th Cong. (1st Sess. 2013) [hereinafter “MFA 2013”].

⁸⁵ James R. Sutton, *Marketplace Fairness Act: The Fallacy of Simplification and the Private Reporting-Based Solution*, TAX ANALYSTS (April 23, 2014),

<http://www.taxanalysts.com/www/features.nsf/Features/347A2EF66D73C12485257CC2005EAAA5?OpenDocument>.

MFA can and will undoubtedly jeopardize small business longevity.⁸⁶ Yet, for large e-tailers, such as Amazon, that have the internal company infrastructure to handle multiple state sales tax compliance issues, this would be more of a minor annoyance. Representative Steve Womack and other strong supporters of the MFA point to provisions added to the MFA to accommodate these concerns. Specifically, the small seller exception and the software provision were added to the MFA in an attempt to address these concerns.⁸⁷

Similar to the MFA, the Remote Transactions Parity Act of 2015 (the “RTPA”) would permit states to require e-tailers acting as remote sellers to collect sales and use taxes for online sales sourced in each state.⁸⁸ The RTPA contains a three year phase-in for “small remote sellers” providing an exception for remote sellers with less than \$10 million in annual gross receipts in year one and dropping down to an excess of \$1 million in gross annual receipts by year three.⁸⁹ However, critics of the RTPA point to the irrelevancy of the RTPA small seller exceptions due to the language in the second component of the exceptions which effectively cancels out benefits of the exceptions for small remote sellers.⁹⁰ Specifically, the clause of concern states that, regardless of gross annual receipts, a state can require collection if the (small or otherwise) remote seller “utilizes an electronic marketplace for the purpose of making products or services available for sale to the public.”⁹¹ Effectively, the federal legislative battle lines over the internet sales and use tax debate morphed into bigger versus smaller e-tailer remote sellers.

Whether from being battle weary over the internet sales tax issue or from arranging ample ‘sweetheart’ internet sales and use tax exemptions, Amazon is now counted among the supporters of the Marketplace Fairness Act legislation.⁹² Opponents to the MFA, state that when considering the impact on small sellers/e-tailers, the Marketplace Fairness Act turns out to be anti-competitive through the imposition of a heavy regulatory and compliance burden. For this reason, companies that are heavily involved with small businesses/micro businesses, such as EBay, oppose the Marketplace Fairness Act. To fully evaluate our hypotheses and assess the strategic reasoning behind Amazon’s behavior in relation to the impact of internet sales and use tax law changes (and Amazon’s 2013 switch in support for the MFA), we use logistics theory and distribution supply chain modeling for Amazon derived from key data points.

⁸⁶ Peter Urban, *Ted Cruz Rallies Against Marketplace Fairness Act*, ARKANSAS NEWS (Nov. 18, 2014) <http://arkansasnews.com/news/arkansas/ted-cruz-rallies-against-marketplace-fairness-act>.

⁸⁷ See MFA 2013, *supra* note 84, at §2(c)(providing that States can only require remote sellers with gross receipts exceeding one million dollars to collect sales and use taxes); see also MFA 2013, *supra* note 84, at §2(b)(2)(D)(specifying that the MFA will provide for free software that will calculate sales and use taxes for remote sellers).

⁸⁸ Remote Transactions Parity Act of 2015, H.R. 2775, 114th Cong. (2d Sess. 2015) [hereinafter *RTPA*].

⁸⁹ *Id.* at §2(c).

⁹⁰ John Greathouse, *Congress’ Latest Online Tax Grab Will Decimate Small Businesses*, FORBES (July 7, 2015), <http://www.forbes.com/sites/johngreathouse/2015/07/07/congress-latest-online-tax-grab-will-decimate-small-businesses/2/#4af9090f5b0e>.

⁹¹ RTPA at §2(c)(1)(A)(ii).

⁹² Katie McAuliffe, *Amazon Can Support the Internet Sales Tax Because Amazon is Exempt*, FORBES (Sept. 4, 2013), <http://www.forbes.com/sites/realspin/2013/09/04/amazon-can-support-the-internet-sales-tax-because-amazon-is-exempt/#7a6355d3ffb0>; see also Amy Martinez, *Amazon Stands to Gain from Online-Sales Tax*, THE SEATTLE TIMES (June 10, 2013), http://old.seattletimes.com/html/business/technology/2021142588_amazonsalestax.xml.html (further discussing Amazon’s switching of sides from opposing the MFA to supporting it).

III. Logistics Theory for Warehousing and Implications for the Changing Internet Sales and Use Tax Landscape

The logistics component of this article investigates and compares the pattern of distribution center site selection processes employed by Amazon across the United States from 1997 to 2011. The analysis operates under the assumption of the two hypotheses associated with the changes to internet sales and use tax law as a result of the passage of variations of the Amazon tax law.

Between 1997-2013 Amazon opened a total of fifty-seven distribution centers across the U.S., closed six, and converted one to a seasonal distribution center (Seattle, Washington).⁹³ As a comparison, by 2005 Amazon had twelve distribution centers compared to Walmart with forty-two discount distribution centers and thirty-four grocery distribution centers.⁹⁴ Figure 1 displays the growth in non-seasonal U.S. Amazon Distribution Centers starting in 1997 until 2013, inclusive of those centers that may have been closed for various reasons (ex. to avoid nexus for tax reasons). As Figure 1 shows, Amazon realized a 344% increase in the number of distribution centers in the period 2009-2013 as compared to the period 1997-2008.⁹⁵ The increase in the number of distribution centers allowed Amazon to offer faster delivery of products to more customers in more markets. See Appendix A at the end of this article for a listing of all distribution centers and warehousing facilities.

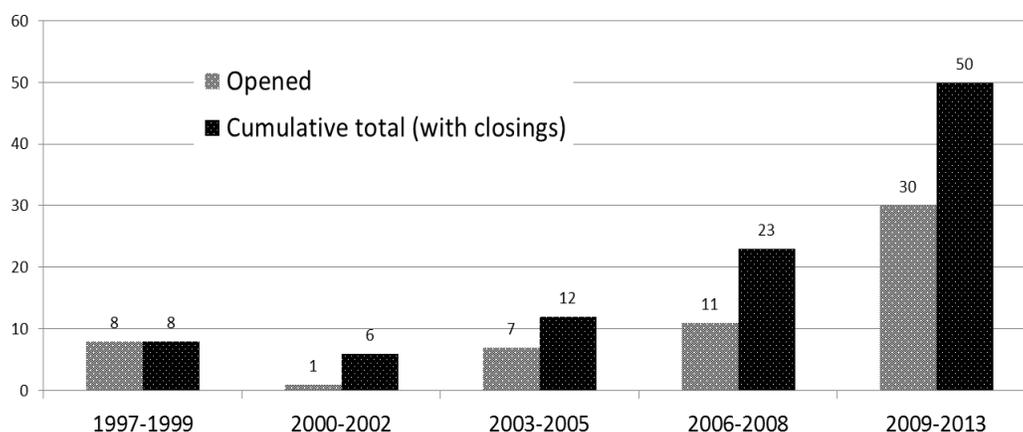


Figure 1: Number of Non-seasonal Amazon Distribution Centers

Interestingly, Amazon opened up five distribution centers in 2008, and then they did not open up any new distribution centers in 2009, and then six more in 2010 (See Appendix A). We can speculate that the delay in opening up distribution centers in 2009 is related to the internet sales and use tax implications (2009 is a threshold year for when States start to implement internet sales-use tax legislation). Thus, Amazon began cutting a lot of sweet-heart or preferential internet and sales use tax deals over this time frame. The deals delay their obligation to comply with the laws, enabling them to strategically get out ahead of the legislation and gain tax savings in the process. Then in 2013 Amazon switched sides, from opposing to supporting, the MFA.⁹⁶

⁹³ MWPVL International, *Amazon Global Fulfillment Center Network*, SUPPLY CHAIN AND LOGISTICS CONSULTANTS (March 2015), http://www.mwpvl.com/html/amazon_com.html [hereinafter “*Amazon Network*”]

⁹⁴ MWPVL International, *The Walmart Distribution Center Network in the United States*, SUPPLY CHAIN AND LOGISTICS CONSULTANTS (March 2015), <http://www.mwpvl.com/html/walmart.html>.

⁹⁵ *Amazon Network*, *supra* note 93.

⁹⁶ See McAuliffe, *supra* note 92.

Locational theory and decision analysis is used to evaluate Amazon's strategic location decisions, that is, to identify where to build the next single fulfillment center, in relation to internet sales tax legislation. Location studies, in general, owe their origins to work in geography and their further development in the economics related discipline of regional science and land economics. Fundamental logistics books⁹⁷ discuss how to locate facilities such as factories and warehouses using a common approach called the Center of Gravity Method.⁹⁸ More current and applied work of Holmes examined the dispersion of Walmart in the United States through 2005 with a focus on the impacts of distribution costs on store locations.⁹⁹ The time frame assessed by Holmes did not account for the internet tax law conflicts associated with e-tailers such as Amazon and affiliates (since Walmart has a physical presence and operations in every state).¹⁰⁰ Additionally, Wilson in 2004 studied location modeling for distribution centers and referred to Chicago Consulting, but only focused on locations in Australia.¹⁰¹

A center of gravity model¹⁰² is used to examine the associations that exist between distribution centers and locations based on the lowest average distance (in miles) to customers and the lowest possible transit lead-times to customers, represented by the U.S. population. Achieving lowest possible logistics lead times¹⁰³ is a key component in an efficient distribution supply chain strategy due to the fact that strategically located distribution centers facilitate a rapid processing of orders and shipments of products to customers.¹⁰⁴

Wilson¹⁰⁵ published the doubly constrained population weighted center of gravity model to develop a matrix of city origins and city destination given by:

⁹⁷ See generally DONALD J. BOWERSOX, LOGISTICAL MANAGEMENT (1974) [discussing contemporary logistical practices]; see also EDWARD J. BARDI & JOHN J. COYLE, THE MANAGEMENT OF BUSINESS LOGISTICS (1984) [discussing fundamental business logistics concepts]; see also RONALD H. BALLOU, BUSINESS LOGISTICS MANAGEMENT: PLANNING, ORGANIZING, AND CONTROLLING THE SUPPLY CHAIN (1999) [discussing logistics, transport, supply chain strategy and planning].

⁹⁸ The "center of gravity" method determines the coordinates for the optimal location based on the customer service level requirements. The Center of Gravity technique uses the Euclidean distance (the distance in a straight line) and captures the commonly accepted idea of "increasing marginal costs," which is that the incremental service levels decrease the farther from the target (of zero travel) to determine optimal locations; see generally ALAN GEOFFREY WILSON, URBAN AND REGIONAL MODELS IN GEOGRAPHY AND PLANNING (1974).

⁹⁹ Thomas J. Holmes. *The Diffusion of Wal-Mart and Economies of Density*, *ECONOMETRICA*, 79(1) 253-302 (2011).

¹⁰⁰ As of January 31, 2005, Walmart had 3,151 retail units in the United States; WALMART CORPORATION, VESTED INTEREST: WALMART 2005 ANNUAL REPORT 17, http://s2.q4cdn.com/056532643/files/doc_financials/2005/2005-annual-report-for-walmart-stores-inc_130202966828901734.pdf; By January 31, 2015, Walmart had 5,163 retail units in the United States; Walmart Corporation, *Our Locations- United States*, WALMART CORPORATION (March 9, 2015), <http://corporate.walmart.com/our-story/our-business/locations/#/united-states>.

¹⁰¹ David Wilson. *Location Modeling in Logistics*, PROCEEDINGS OF THE CONFERENCE OF AUSTRALIAN INSTITUTES OF TRANSPORT RESEARCH (CAITR), 36 (2004).

¹⁰² WILSON, *supra* note 98, at 66.

¹⁰³ Lead time is the time (delay) between the initiation of an order and the completion of its fulfillment; see generally JAY HEIZER AND BARRY RENDER, OPERATIONS MANAGEMENT (2013).

¹⁰⁴ PATRIK JONSSON, LOGISTICS AND SUPPLY CHAIN MANAGEMENT (2008).

¹⁰⁵ WILSON, *supra* note 98, at 66.

$$T_{ij} = A_i B_j O_i D_j f(C_{ij});$$

$$A_i = \frac{1}{\sum_{j=1}^J B_j D_j f(C_{ij})};$$

$$B_j = \frac{1}{\sum_{i=1}^I A_i O_i f(C_{ij})};$$

$$f(C_{ij}) = e^{\alpha(C_{ij})}, \alpha < 0$$

where T_{ij} represents the freight trips between zone i and j ; O_i is the originating freight trips for zone i ; D_j is the destination freight trips for zone j ; C_{ij} represents the “distance” between zone i and j ; and A_i , B_j are the balancing factors solved iteratively. Finally, α is the friction factor which determines the ease of travel between any two zones.

We partnered with Chicago Consulting¹⁰⁶ to simulate the model utilizing their software and algorithms to compare optimal strategic DC decisions to Amazon’s actual DC choices (see Appendix B). The software was limited to evaluate 30 distribution centers at any one time. Since Amazon operated more than 30 distribution centers after 2011, this limited our analysis to the time period of 1997 (when Amazon opened up their first distribution center) to 2011. The urban population (a measure of demand) used in the model is based on 2014 population figures. We operate under the assumption that the pattern of urban population growth is relatively consistent over the time period for our study, alternatively, this means that the ratio of population/demand for cities is relatively consistent as well. For example, based on the U.S. census that was conducted in 2000, and again in 2010¹⁰⁷ (the next time it will be conducted is in 2020), New York-Northern New Jersey-Long Island is the most populated metropolitan area and the population changed by only 3.1% between 2000-2010, Los Angeles-Long Beach-Santa Ana remained the second most populated area, and Chicago-Joliet-Naperville remained third, etcetera¹⁰⁸.

The results for the optimal location differ depending on the number of distribution centers in the network. For example, the data shows that if any one organization has only 1 distribution center, then Vincennes, IN would provide the lowest possible lead-time; alternatively, if any one organization has only 2 distribution center, then Ashland, KY, and Porterville, CA would provide the lowest possible lead-times. Therefore, if warehouses are not in these optimal locations, this will cause the average transit lead time and the average distance to customers to be higher causing less than optimal conditions for shipment of products to customers.

So how does Amazon’s strategic distribution center location decision compare to the best possible, or optimal, locations? The results of the model show that Amazon’s network of distribution centers would have been better located to serve the U.S. population than where they were located (see Appendix C). From an intuitive perspective, Amazon’s network misses strategic locations in crucial regions such as Southern California, Chicago and Atlanta, since

¹⁰⁶ See generally CHICAGO CONSULTING, <http://www.chicago-consulting.com/> (last visited May 28, 2016).

¹⁰⁷ See generally UNITED STATES CENSUS 2010, <http://www.census.gov/2010census/> (last visited May 28, 2016).

¹⁰⁸ UNITED STATES CENSUS BUREAU, C2010BR-01, POPULATION DISTRIBUTION AND CHANGE 2000 TO 2010 (March 2011), <https://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf>.

these locations provide better service and at a lower cost than other (non-optimal) locational choices.¹⁰⁹ In addition, Amazon’s multiple locations in Kentucky, Pennsylvania and Tennessee overlap each other creating a redundancy (see Appendix B) which affects Amazon’s ability to increase the speed of delivery of products to areas all across the U.S.

We use metrics to quantitatively evaluate the difference between Amazon’s DC locations with the best possible solution (see Table 1). When examining the warehouse decision problem, emphasis was placed on minimizing the average distance (in miles) to customers and the average lead-time (in days), to provide optimal delivery of products to customers. We compare each year that Amazon opened new distribution centers to the optimal strategic location that would enable fastest delivery of products to customers. The change (Δ) in the average distance (in miles) to customers between Amazon and the optimal strategic DC location during the period 1997 – 2011 ranges from an increase of 33%¹¹⁰ to 165%; Alternatively the change in the average lead time (in days) to customers between Amazon and the optimal strategic DC location in ranges from an increase of 7% to 31% between 1997 – 2011:

Year	Actual		Best Possible (With the Same Number of Warehouses)		Average Distance (Miles) to customers Δ	Average Lead- time (Days) Δ
	Average Distance (Miles) to customers	Average Lead- time (Days)	Average Distance (Miles) to customers	Average Lead- time (Days)		
1997	674	2.00	506	1.53	33%	31%
1999	302	1.15	211	1.07	43%	7%
2000	296	1.15	198	1.04	49%	11%
2001	347	1.23	227	1.10	53%	12%
2003	343	1.23	211	1.07	63%	15%
2005	320	1.21	170	1.04	88%	16%
2007	262	1.16	133	1.01	97%	14%
2008	245	1.16	106	1.01	131%	15%
2009	256	1.16	122	1.01	110%	15%
2010	246	1.16	102	1.01	141%	15%
2011	228	1.13	86	1.00	165%	13%

Table 1: Comparison of Actual and Best Possible Locations Over Time for Amazon

To test the hypothesis that there was a change in Amazon’s behavior related to the internet tax law changes, we examine the time frame that states first enacted sales tax legislation starting with New York State’s Amazon Law enacted in 2008¹¹¹ and several states following suit. We performed a t-test for unequal variances and find that the change in the average lead time (in days) for the distribution center locations comparing Amazon’s locations decision to the

¹⁰⁹ Chicago Consulting, *supra* note 106.

¹¹⁰ In 1997, with two distribution centers open, Amazon averaged 674 miles to get products to customers. The difference between Amazon’s average (674) and the best possible scenario with two distribution centers (506 average miles) is 168 average miles. The ratio $168/506 * 100$ is the difference (33%) between Amazon’s strategic DC locational choices and the optimal DC location choice to get the product to customers as fast as possible, that is, Amazon’s decisions increased the average distance to customers by 33%.

¹¹¹ N.Y. State Tax Law § 1101(b)(8)(vi); See *Overstock.com, Inc. v. New York State Dep’t of Taxation & Fin.*, 20 N.Y.3d 586, 590, 987 N.E.2d 621, 622 (2013).

best possible locations is significantly different (two-tail $p < .01$) for the period 1997-2007 compared to the period after NYS enacted sales tax legislation, 2008-2011. Specifically, the significant change in the average distance to customers (in miles) from 1997-2007 and 2008-2011 compared to the best possible solution, which averages 61% and 137%, respectively.

The results (Table 1) validate a change in Amazon's behavior from a focus on optimal distribution center location decisions to maximize customer service in their supply chain to one aimed to mitigate tax implications through sales tax avoidance by alteration of their strategic distribution model. There is, however, a change from an average of 1.30 days of transit time for the time period of 1997-2007 to an average of 1.15 days of transit time for the time period of 2008-2011. This decrease in transit time is merely due the increased number of distribution centers but the location of the distribution centers is not optimal to best suit a strategy to get the product to the consumer in the fastest possible time allotted.

However, Amazon's strategic distribution center location decisions are changing once again. Amazon's original strategic strategy based on avoiding the need to charge consumers sales tax and reducing costs is undermined by the number of states that have proposed sales tax legislation (26 (28) states at the end of 2015 (2016)¹¹² (see Appendix A)). Since this competitive cost advantage is coming to a close, Amazon is focusing on increasing the speed of delivery of packages by strategically positioning its distribution centers closer to metropolitan areas (in 2004, 38% of Amazon's fulfillment capacity was less than 200 miles from a major metropolitan area compared to 79% today¹¹³), opening up smaller sortation centers, purchasing trucks for its own fleet to make deliveries between fulfillment centers and sorting locations, and investment in research and development of Prime Air, which is a delivery system using small unmanned aerial vehicles (drones) claiming to get packages under 5 pounds to customers in 30 minutes or less¹¹⁴. Amazon increased R&D by over 35% in the last quarter of 2014 compared to the last quarter of 2015, spending over \$12 billion in R&D during the 2015 calendar year alone¹¹⁵.

More specifically, Amazon started offering same day delivery services to select locations in 2015 and currently offers this service in 16 metro areas in the U.S.¹¹⁶. As of 2016, Amazon offers same-day shipping in metro areas of New York City, Atlanta, Baltimore, Boston, Chicago, Indianapolis, Tampa Bay, Philadelphia, Washington D.C., Dallas, Los Angeles, Phoenix, San Francisco, Seattle, Chicago, and Orlando.¹¹⁷ In an effort to integrate their distribution and compete with major carriers, Amazon is investing in new shipping warehouse facilities that are smaller, called "sortation centers". Amazon has announced plans to open 15 specialized sortation centers this year, designed to be speedier and expand deliveries to Sundays, which gets packages to nearby USPS offices for last-mile service. There are eight sortation centers opened

¹¹² Amazon.com, *About Sales Tax*, AMAZON.COM, INC. (May 28, 2016), <https://www.amazon.com/gp/help/customer/display.html?nodeId=468512>.

¹¹³ Bob Trebilcock, *Supply Chain: Amazon is Changing the Rules of the Game*, MODERN MATERIALS HANDLING (December 14, 2012), http://www.mmh.com/article/supply_chain_amazon_is_changing_the_rules_of_the_game.

¹¹⁴ Ahiza Garcia, *Amazon Trucks Hit the Road to Speed Deliveries*, CNRMONEY (December 4, 2015), <http://money.cnn.com/2015/12/04/news/companies/amazon-delivery-trucks/>.

¹¹⁵ Google Finance, *Amazon.com, Inc. Financials*, GOOGLE (May 28, 2016), <https://www.google.com/finance?q=NASDAQ%3AAMZN&fstype=ii&ei=6zXZU5j6KMqfrAHHp4GoCA>.

¹¹⁶ Amazon.com, *Free-Same Day Delivery*, AMAZON.COM, INC. (May 28, 2016), <http://www.amazon.com/b?node=8729023011>.

¹¹⁷ *Id.*

as of 2014 in Kent, WA, Atlanta, GA, Dallas, TX, Houston, TX, Phoenix, AR, Avenel, NJ, Hebron, KY, and San Bernardino, CA¹¹⁸.

IV. Conclusion

The data compiled matching up Amazon's reaction to alternations in sales and use tax policies following the enactment of the New York Amazon tax law show a transition from Hypothesis 1 to Hypothesis 2. This really begins to manifest around 2010 demonstrating a significant shift in Amazon supply chain strategy from speed of delivery to deterring costs associated with new state Amazon 'internet' sales tax laws and policies. Evaluating the data, it is clear that efficiency in their supply chain diminished in response to the growth of various Amazon-style internet sales tax legislation.

While much of the opposition discussion to the Marketplace Fairness Act focused on how the MFA harms small e-tailers, the compilation of Amazon's DC/warehousing and internet sales and use tax legislative data in our model resulted in an outcome demonstrating the negative consequences to large e-tailers, such as Amazon. Thus, the current patchwork of state internet sales and use tax laws undermine e-tailer operational effectiveness and diminish consumer value by negatively impacting supply chain efficiency for large e-tailers in addition to allegedly harm. This is in addition to concerns voiced by numerous researchers and commentators regarding the impact of legislation such as the MFA on small and micro e-tailers.

Today, the online retailer currently has more than 70 domestic fulfillment centers in 28 states¹¹⁹ as Amazon is investing to provide faster service to its customers by building DC's near major metropolitan areas. Amazon is making deals with states where it plans to open up distribution centers in optimal locations (see Appendix A), and showing support of the MFA¹²⁰. It can be argued that, the increase in the number of states that have implemented the "Amazon sales tax" laws, and Amazon's subsequent support of the Marketplace Fairness Act, allowed Amazon to focus on same-day deliveries.

¹¹⁸ Mike O'Brien, *Amazon to Open 15 Sortation Centers*, MULTICHANNEL MERCHANT (Aug 05, 2014), <http://multichannelmerchant.com/opsandfulfillment/warehouse/amazon-open-15-sortation-centers-2014-05082014/>.

¹¹⁹ *Amazon Network*, *supra* note 93.

¹²⁰ Brad Tuttle, *Amazon Supports a Bill Forcing Online Shoppers to Pay Sales Tax*, TIME (Nov. 11, 2011), <http://business.time.com/2011/11/11/amazon-supports-a-bill-forcing-online-shoppers-to-pay-sales-tax/>.

Appendix A: Amazon Tax Law Implementations and Reactions

Year Law or Deal Initiated	Year Tax Law Takes Effect	State	Amazon.com, Inc.'s Reaction
2008	2008	NY	Went all the way to the U.S. Supreme Court
2009	2014	NC	Amazon ended affiliates program; Massive legal problem delayed tax collection
2009	2009	RI	Amazon ended affiliates program
2009	N/A	HI	Amazon threatened to end affiliates program; Governor vetoed tax
2010	N/A	CO	Amazon ended affiliates program; Law tied up in courts by Direct Marketing Association (trade association)
2010	2010	OK	Use tax notification law requiring out-of-state internet retailers to provide notification of use tax requirements.
2011	2011	VT	Amazon ended affiliates program
2011	2011	AR	Amazon ended affiliates program
2011	2011	SD	Use tax notification law requiring out-of-state internet retailers to provide notification of use tax requirements [Similar to OK's Amazon law]
2011	N/A	LA	Amazon Tax Legislative Proposal failed
2011	2015	IL	Illinois Supreme Court vetoed law – cited Internet Tax Freedom Act [ITFA] in 2011. Amended law passed in 2015 and Amazon begins collection then.
2011	N/A	ID	Proposal failed
2011	2012	CA	Amazon threatened to end affiliates program. CA made a deal to delay tax. Amazon reinstated affiliates program
2012	2012	PA	Amazon refused to comply for 8 months (Feb. (when law initiated) – Sept. (tax collected))
2012	2013	GA	Amazon required to start collection in September 2013
2012	2012	TX	TX stated that current sales tax law already applied to Amazon and sent a bill (\$269m) to Amazon to collect back taxes. Amazon closed Irving distribution center.
2012	2013	MA	Amazon makes a deal to open distribution centers (inc. jobs & investment in the state) to delay tax collection until 2013 (law based around Amazon deal)
2013	2013	MO	Amazon ended affiliates program
2013	2013	MN	Amazon ended affiliates program

2013	2015	OH	Governor vetoed the law in 2013 but cut a deal with Amazon to start collection in 2015 in exchange for web services data centers.
2013	2014	MD	Announced in 2013; Amazon Opened DC in March 2015 in Southeast Baltimore
2013	2013	IA	Law passed/no reaction.
2011	2013	CT	Amazon ended affiliates program
2012	2013	NJ	Amazon cut a deal in 2012 to delay tax by fifteen months, as well as other financial incentives, in an agreement to build distribution centers in the state.
2013	2013	VA	State says they are already entitled to sales tax collection under current law. Amazon makes capital investment in the state
2013	2013	WI	N/A
2013	2015	MI	None.
2013	2013	WV	Amazon initially ended affiliates program, but then complied in October 2013.
2013	2013	ME	Amazon ended affiliates program
2011	N/A	MS	Law failed in legislature
2012	2014	IN	Amazon made a deal with Gov. Mitch Daniels to start collecting sales tax in January 2014.
2014	2014	FL	In 2013 Amazon makes a deal to open distribution centers (inc. jobs & investment in the state) to delay tax collection until 2014 (law based around Amazon deal)
2012	2014	NV	In 2012 Amazon makes a deal to open distribution centers (inc. jobs & investment in the state) to delay tax collection until January 2014 (law based around Amazon deal)
2012	2014	TN	In 2012 Amazon made a deal to delay sales tax collection until January 2014
2011	2016	SC	In 2011 Amazon makes a deal to open distribution centers (inc. jobs & investment in the state) to delay tax collection until January 2016 (law based around Amazon deal)

Appendix B: Amazon Distribution and Warehousing Facilities 1997-2015

State	City	Year Amazon DC Opened	Year Amazon DC Closed/ Converted	Year State implemented tax
Delaware	New Castle	1997	--	--
Washington	Seattle	1997	2001	--
Georgia	McDonough	1999	2001	--
Kansas	Coffeyville	1999	--	--
Kentucky	Campbellsville	1999	--	--
Nevada	Fernley	1999	--	2014
Nevada	Red Rock	1999	2009	2014
North Dakota	Grand Forks	1999	2005	--
Kentucky	Lexington (1)	2000	--	--
Pennsylvania	Chambersburg	2003	2009	2012
Kentucky	Hebron (1)	2005	--	--
Kentucky	Hebron (2)	2005	--	--
Kentucky	Louisville	2005	--	--
Kentucky	Shepherdsville (1)	2005	--	--
Kentucky	Shepherdsville (3)	2005	--	--
Texas	Irving	2005	2011	2012
Kentucky	Lexington (2)	2006	--	--
Arizona	Phoenix (1)	2007	--	--
Indiana	Munster	2007	2009	--
Kentucky	Hebron (3)	2007	--	--
New Hampshire	Nashua	2007	--	--
Washington	Bellevue	2007	--	--
Arizona	GoodYear	2008	--	--
Indiana	Plainfield (1)	2008	--	--
Indiana	Whitestown	2008	--	--
Nevada	Las Vegas	2008	--	2014
Pennsylvania	Hazleton	2008	--	2012
Arizona	Phoenix (2)	2010	--	--
Pennsylvania	Breinigsville (1)	2010	--	2012
Pennsylvania	Carlisle (1)	2010	--	2012
Pennsylvania	Carlisle (2)	2010	--	2012
Pennsylvania	Lewisberry	2010	--	2012
Virginia	Sterling	2010	--	2013
Arizona	Phoenix (3)	2011	--	--
Indiana	Indianapolis	2011	--	--
Indiana	Plainfield (2)	2011	--	--
Kentucky	Shepherdsville (2)	2011	--	--

Pennsylvania	Breinigsville (2)	2011	--	2012
South Carolina	Cayce	2011	--	2016
Tennessee	Charleston	2011	--	2014
Tennessee	Chattanooga	2011	--	2014
Tennessee	Lebanon (1)	2011	--	2014
Washington	Sumner	2011	--	--
Delaware	Middletown	2012	--	--
Indiana	Jefferson	2012	--	--
South Carolina	Spartanburg	2012	--	2016
Tennessee	Lebanon (2)	2012	--	2014
Tennessee	Murfreesboro	2012	--	2014
Virginia	Chesterfield	2012	--	2013
Virginia	Petersburg	2012	--	2013
California	Patterson	2013	--	2012
California	Tracy	2013	--	2012
Texas	Coppell	2013	--	2012
Texas	Haslet	2013	--	2012
Texas	Schertz	2013	--	2012
Washington	DuPont	2013	--	--
New Jersey	Robbinsville	2014	--	2014
Massachusetts	Stoughton	2014	--	2013
Wisconsin	Kenosha	2014	--	2013
Maryland	Baltimore	2015	--	--
Michigan	Brownstown	2015	--	--
Logan Township	New Jersey	2015	--	2013
Connecticut	Windsor	2015	--	2013
Illinois	Joliet	2015	--	2015
Minnesota	Shakopee	2017	--	--
New Jersey	Carteret	TBD	--	2014
Kansas	Lenexa	TBD	--	--

Appendix C: Center of Gravity Model Results

YEAR	Actual Locations			Best Possible Locations with same number of locations		
1997	New Castle DE	Seattle WA		Ashland KY	Porterville CA	
1999	New Castle DE	Campbellsville KY	Grand Forks ND	Brooklyn NY	Chicago IL	Bell Gardens CA
	Seattle WA	Fernley NV	Red Rock NV	Athens GA	Palestine TX	Bonney Lake WA
	Coffeyville KS	McDonough GA		Palm Bay FL	Aurora CO	
2000	New Castle DE	Campbellsville KY	Grand Forks ND	Brooklyn NY	Chicago IL	Bell Gardens CA
	Seattle WA	Fernley NV	Red Rock NV	Aiken SC	Palestine TX	Bonney Lake WA
	Coffeyville KS	McDonough GA	Lexington KY	Lakeland FL	Denver CO	San Juan PR
2001	New Castle DE	Fernley NV	Lexington KY	Brooklyn NY	Bell Gardens CA	Bonney Lake WA
	Coffeyville KS	Grand Forks ND		Chicago IL	Grand Prairie TX	
	Campbellsville KY	Red Rock NV		Palm Bay FL	Athens GA	
2003	New Castle DE	Fernley NV	Lexington KY	Brooklyn NY	Chicago IL	Bell Gardens CA
	Coffeyville KS	Grand Forks ND	Chambersburg PA	Athens GA	Palestine TX	Bonney Lake WA
	Campbellsville KY	Red Rock NV		Palm Bay FL	Aurora CO	
2005	New Castle DE	Fernley NV	Chambersburg PA	Astoria, NY	Pasadena, CA	Athens, GA
	Coffeyville KS	Red Rock NV	Irving Texas	Rockford, IL	Palestine, TX	Bonney Lake WA
	Campbellsville KY	Lexington KY	Hebron KY	Oakland CA	Marion OH	Lakeland FL
	Louisville KY	Shepherdsville KY		San Juan PR	Aurora, CO	
2007	New Castle DE	Red Rock NV	Louisville KY	Passaic NJ	Pasadena, CA	Buford GA
	Coffeyville KS	Chambersburg PA	Shepherdsville KY	Chicago, IL	College Station TX	Bonney Lake WA
	Campbellsville KY	Irving Texas	Lexington KY	Oakland CA	Mansfield OH	Lakeland FL
	Fernley NV	Hebron KY	Phoenix AZ	San Juan PR	Lakeville MN	Boulder CO
	Nashua NH	Bellevue WA	Munster IN	Harrisonville MO	Waipahu HI	Springfield MO
2008	New Castle DE	Lexington KY	Shepherdsville KY	Astoria NY	Glendale CA	Atlanta GA
	Coffeyville KS	Chambersburg PA	Phoenix AZ	Cicero IL	Waco TX	Bonney Lake WA
	Campbellsville KY	Irving Texas	Nashua NH	Lakeland FL	Boulder CO	San Juan PR
	Fernley NV	Hebron KY	Bellevue WA	Oakland CA	Lakewood OH	Waipahu HI
	Red Rock NV	Louisville KY	Munster IN	Alexandria VA	Harrisonville MO	Anoka MN
	Goodyear AZ	Whitestown IN	Hazleton PA	Phoenix AZ	Jackson MS	Rock Hill SC
	Plainfield IN	Las Vegas NV		Peabody MA	Houlton ME	
2009	New Castle DE	Hebron KY	Goodyear AZ	Passaic NJ	Glendale CA	Athens, GA
	Coffeyville KS	Louisville KY	Plainfield IN	Chicago IL	College Station TX	Bonney Lake WA
	Campbellsville KY	Shepherdsville KY	Whitestown IN	Oakland CA	Mansfield OH	Lakeland FL
	Fernley NV	Phoenix AZ	Las Vegas NV	San Juan PR	Lakeville MN	Boulder CO
	Lexington KY	Nashua NH	Hazleton PA	Phoenix AZ	Waipahu HI	Gaithersburg MD

	Irving Texas	Bellevue WA		Waco TX	Hattiesburg MS	
2010	New Castle DE	Louisville KY	Plainfield IN	Astoria NY	Glendale CA	Atlanta GA
	Coffeyville KS	Shepherdsville KY	Whitestown IN	Cicero IL	Waco TX	Bonney Lake WA
	Campbellsville KY	Phoenix AZ	Las Vegas NV	Lakeland FL	Aurora CO	San Juan PR
	Fernley NV	Nashua NH	Hazleton PA	Oakland CA	Lakewood OH	Waipahu HI
	Lexington KY	Bellevue WA	Breinigsville PA	Alexandria VA	Harrisonville MO	Anoka MN
	Irving Texas	GoodYear AZ	Carlisle PA	Phoenix AZ	Jackson MS	Rock Hill SC
	Hebron KY	Lewisberry PA	Sterling VA	Peabody MA	Lawrenceburg , IN	Clearfield UT
2011	New Castle DE	Shepherdsville KY	Las Vegas NV	Astoria NY	Glendale CA	Atlanta GA
	Coffeyville KS	Phoenix AZ	Hazleton PA	Cicero IL	Mesquite TX	Bonney Lake WA
	Campbellsville KY	Nashua NH	Breinigsville PA	Clermont FL	Aurora CO	San Juan PR
	Fernley NV	Bellevue WA	Carlisle PA	Oakland CA	Lakewood OH	Waipahu HI
	Lexington KY	GoodYear AZ	Lewisberry PA	Alexandria VA	Olathe KS	Minneapolis MN
	Hebron KY	Plainfield IN	Sterling VA	Chandler AZ	Jackson MS	Concord NC
	Louisville KY	Whitestown IN	Indianapolis IN	Peabody MA	Lawrenceburg , IN	Clearfield UT
	Cayce SC	Chattanooga TN	Sumner WA	Katy TX	Ankorage AK	Saint Louis MO
	Charleston TN	Lebanon TN		Hialeah FL	Alamogordo NM	