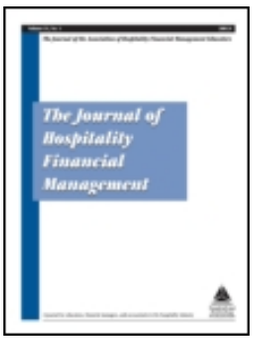

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INTERNET GAMING REGULATION: VALUATION CONCERNS FOR THE INDUSTRY

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ABSTRACT. On October 13, 2006, President George W. Bush signed the Unlawful Internet Gambling Enforcement Act (UIGEA) of 2006 as an attachment to the Security and Accountability for Every Port Act of 2006. UIGEA is the first federal regulation specific to the online gaming industry. In this article, we examine the impact of UIGEA and its subsequent interpretation (through administrative rulemaking and Department of Justice actions) on the value of U.S. publicly traded firms in the gaming industry. We find that UIGEA is associated with an average increase in firm values in the gaming industry of approximately 2.86%. We also find that firms with a greater percentage of revenue from retail gaming gained more from UIGEA. Finally, we document that the Justice Department's ruling on December 23, 2011, that not all gaming on the Internet is illegal, is associated with a positive 3.55% return. We conclude that allowed, regulated, controlled growth of Internet gaming is likely to provide significant value to the U.S. gaming industry.

INTRODUCTION AND CONTEXT OF THE STUDY

The Unfair Internet Gambling Enforcement Act (UIGEA) was signed into law by President George W. Bush as a conference report added to the Security and Accountability for Every Port Act (SAEPA) of 2006 (GovTrack.us, n.d.). The UIGEA was the first federal legislation aimed specifically at the regulation of Internet gaming. Interpretation of the law occurred through administrative rulemaking and Department of Justice (DOJ) actions over the next 6 years. Prior to the 2006 Act, many attempts to provide federal oversight of Internet gaming occurred. Between 1995 and the passage of UIGEA in 2006, there were 19 bills submitted to either the House or the Senate that were intended to provide regulation of the online gaming industry (Table 1). In addition to the regulatory bills were two bills to study Internet gaming and one bill to express consensus.

UIGEA prohibits the transfer of funds from a financial institution to an Internet gambling site, with exceptions for "fantasy" sports, online lotteries, and horse/harness racing. Both prior to and after the passage of the UIGEA, there was considerable diversity of opinion among lawmakers about the structure of optimal Internet gambling regulation. For example, various bills over time have been submitted by both Democrats and Republicans. Thirteen regulatory bills were submitted by Republicans, and six regulatory bills were submitted by Democrats prior to UIGEA. In addition, it was 11 years after the introduction of the first bill

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TABLE 1. Legislative Introduction of Bills and Department of Justice Actions With Respect to Online Gaming.***

#	Intro H or S*	D or R**	Act Name	Date of Introduction
1	H497	R	National Gambling Impact Study Commission Act	01/11/1995
2	S704	D	National Gambling Impact Study Commission Act	04/06/1995
3	H3526	D	Computer Gambling Prevention Act of 1996	05/23/1996
4	S474	R	Internet Gambling Prohibition Act of 1997	03/19/1997
5	H2380	R	Internet Gambling Prohibition Act of 1997	09/03/1997
6	H4350	R	Internet Gambling Prohibition Act of 1998	07/29/1998
7	H4427	R	Internet Gambling Prohibition Act of 1998	08/06/1999
8	S692	R	Internet Gambling Prohibition Act of 1999	03/23/1999
9	H137	D	Expressing the sense of Congress with regard to the recommendations of the National Gambling Impact Study Commission	06/18/1999
10	H3125	R	Internet Gambling Prohibition Act of 2000	10/21/1999
11	H4419	R	Unlawful Internet Gambling Funding Prohibition Act	05/10/2000
12	H5020	D	Comprehensive Internet Gambling Prohibition Act of 2000	07/27/2000
13	H556	R	Leach-LaFalce Internet Gambling Enforcement Act	02/12/2000
14	H2579	D	Internet Gambling Payments Prohibition Act	07/20/2000
15	H3215	R	Combating Illegal Gambling Reform and Modernization Act	11/01/2001
16	S3006	D	Comprehensive Internet Gambling Prohibition Act of 2002	09/25/2002
17	H5760	D	Internet Gambling Licensing and Regulation Commission Act	11/19/2002
18	H2143	R	Unlawful Internet Gambling Funding Prohibition Act	01/07/2003
19	H1223	D	Internet Gambling Licensing and Regulation Commission Act	03/12/2003
20	S627	R	Internet Gambling Funding Prohibition Act	03/13/2003
21	H2143	R	Unlawful Internet Gambling Funding Prohibition Act	05/19/2003
22	H4411	R	Internet Gambling Prohibition and Enforcement Act*	11/18/2005
23	H4777	R	Internet Gambling Prohibition Act	02/16/2006
24	H4954	R	SAFE Port Act: Portion of the Internet Gambling Prohibition Act attached to this Act just before passage by House and Senate*** Safe Port Act introduced House 03/14/2006 Safe Port Act pass House 05/4/2006 Safe Port Act pass Senate 09/14/2006 UIGEA added to Safe Port Act as report accepted by House 09/29/2006 UIGEA added to Safe Port Act as report accepted by Senate 09/30/2006 Safe Port Act UIGEA signed by President Bush 10/13/2006	03/14/2006
25	H5474	R	Internet Gambling Study Commission Act	05/24/2006
26	H907	R	Providing for consideration of the Bill (H.R. 4411) to prevent the use of certain payment instruments, credit cards, and fund transfers for unlawful Internet gambling, and for other purposes	07/10/2006
27	H2046	D	Internet Gambling Regulation and Enforcement Act of 2007	04/26/2007
28	H2140	D	Internet Gambling Study Act	05/03/2007
29	H2610	D	Skill Game Protection Act	06/07/2007
30	H5523	D	Internet Gambling Regulation and Tax Enforcement Act of 2008	03/04/2008
31	H6663	R	Unlawful Internet Gambling Enforcement Clarification and Implementation Act of 2008	07/30/2008
32	S3616	D	Internet Skill Game Licensing and Control Act of 2008	09/26/2008
33			Federal Reserve Board in consultation with Attorney General announces administrative rules associated with UIGEA	12/11/2008
34	H2267	D	Internet Gambling Regulation, Consumer Protection, and Enforcement Act	05/06/2009
35	H2268	D	Internet Gambling Regulation and Tax Enforcement Act of 2009	05/06/2009
36	S1597	D	Internet Poker and Game of Skill Regulation, Consumer Protection, and Enforcement Act of 2009	08/06/2009
37	H4976	D	Internet Gambling Regulation and Tax Enforcement Act of 2010	03/25/2010
38	H5599	D	Wire Clarification Act of 2010	06/24/2010
39	H1174	R	Internet Gambling Regulation, Consumer Protection, and Enforcement Act	03/17/2011
40			Justice Department indictes four firms; "Black Friday"	04/15/2011
41	H2230	D	Internet Gambling Regulation and Tax Enforcement Act of 2011	06/16/2011
42	H2366	R	Internet Gambling Prohibition, Poker Consumer Protection, and Strengthening UIGEA Act of 2011	06/24/2011
43			Justice Department Flip-Flops on the interpretation of The Wire Act	12/23/2011

(*continued*)

TABLE 1 – (*Continued*)

#	Intro H or S*	D or R**	Act Name	Date of Introduction
44	H2282	R	Internet Gambling Regulation, Enforcement, and Consumer Protection Act of 2013	06/06/2013
45	H2666	R	Internet Poker Freedom Act of 2013	07/11/2013
46	H3491	D	Internet Gambling Regulation and Tax Enforcement Act of 2013	11/14/2013

* If the Bill was introduced into the House of Representatives it is denoted by H. If the Bill was introduced into the Senate it is denoted by S. Next to H or S is the House or Senate Bill number, respectively.

** Over the years, 23 Internet gambling Bills were originated by Democrats (signified by D), and 21 were originated by Republicans (signified by R).

*** UIGEA added as a conference report 109-711 to the Port Act after discussions in the Senate H.R. Bill 4411. The language of the Bill was drawn almost exclusively from H.R. Bill 4411. The Unlawful Internet Gambling Enforcement Act of 2006 (UIGEA) is a U.S. law which was approved in late 2006. It was added to the Security and Accountability for Every Port Act of 2006 via conference committee and was signed by President Bush on October 13, 2006. The Act prohibits the transfer of funds from a financial institution to an Internet gambling site, with the notable exceptions of "fantasy" sports, online lotteries, and horse/harness racing. The UIGEA became law despite never being debated on by the Senate. It passed the House on July 11, 2006 by a 317–93 vote (22 nonvotes) but was not taken up by the Senate. During a conference committee to iron out the differences between the House and Senate's version of the Security and Accountability for Every Port Act of 2006 the UIGEA was added to that Bill, which was then approved in up-or-down votes by both chambers of Congress. The House version of the UIGEA was cosponsored by Reps. Bob Goodlatte (R-Va.) and Jim Leach (R-Iowa).

before Congress reached consensus and enacted legislation specific to the online gambling industry.

As indicated in Table 2, support for UIGEA has come from a long list of disparate groups, including religious, banking, and other organizations (Stop Predatory Gambling Organization, 2006). It is noteworthy that the American Gaming Association is not on the list of supporting organizations. The American Gaming Association, which began in 1995, purports to lobby for the interests of the gaming industry. Strangely, UIGEA is not mentioned in the American Gaming Association's 2006 annual report (American Gaming Association, 2006). The lack of attention to UIGEA in 2006 by the American Gaming Association may be reflective of a lack of industry consensus in 2006 with regard to the type of regulation the industry desired. However, the lack of consensus does not necessarily imply that the industry leaders were unconcerned.

UIGEA has received a considerable amount of attention from the public, and debate has been heated. Some proponents believed it would protect vulnerable individuals (Cypra, 2009; Hills, 2010; Kredell, 2010). Typical of many religious organizations that supported UIGEA, Focus on the Family's gambling spokesperson, Chad Hills, stated that "From our perspective, Internet gambling represents one of the most invasive and highly addictive forms of gambling." By implication, religious organizations who supported UIGEA believe it provides a disincentive to Internet gamble and that this is good for at-risk individuals.

On the other side of the debate are those who think that individuals should have a right to choose the activities they engage in and should not be constrained by legislative actions (Kredell 2010). This view was exemplified by Senator Barney Frank. Senator Frank argued

> There is a practice around today that causes a lot of problems, damages families, people lose their jobs, they get in debt. They do it in excess. It is called drinking. … Prohibition didn't work for alcohol; it doesn't work for gambling.

Disagreement about Internet gaming and UIGEA continues to the current day. Illustrating this debate, Sheldon Adelson, CEO of Las Vegas Sands Casino, strongly opposed the legalization of online gaming, yet Caesars Entertainment, MGM, and the American Gaming Association expressed strong views in favor of legalizing Internet gaming (Kusnetz, 2014; Stewart 2011). The importance of regulation to the gaming industry is revealed by the fact that the gaming industry, between 2009 and 2012, contributed

TABLE 2. Organizations That Supported Passage of UIGEA in 2006.

Type of Organization	#	Organization Name
Sports	1	National Football League
	2	National Collegiate Athletic Association
	3	Major League Baseball
	4	National Basketball Association
	5	National Hockey League
Law Enforcement		
	1	National Association of Attorneys General
	2	National District Attorneys Association
	3	Federal Criminal Investigators
	4	Fraternal Order of Police
Financial		
	1	American Bankers Association
	2	America's Community Bankers
	3	Securities Industry of America
	4	American Express
	5	Citigroup
	6	MasterCard
	7	HSBC North America
Family and Social Welfare		
	1	National Coalition Against Gambling Expansion
	2	Truth About Gambling Foundation
	3	Family Research Council
	4	Christian Coalition
	5	Concerned Women for America
	6	American Values
	7	Center for Moral Clarity
	8	Citizens for Community Values
	9	Eagle Forum
	10	Family Leader Network
	11	Family Resource Network
	12	Focus on the Family
	13	Religious Freedom Coalition
	14	American Association of Christian Schools
	15	Network of Politically Active Christians
	16	The Center for Arizona Policy
	17	Arkansas Family Council
	18	Hawaii Family Forum
	19	United Families Idaho
	20	Illinois Family Institute
	21	American Family Association of Indiana
	22	Iowa Family Policy Center
	23	The Family Foundation (Kentucky)
	24	Louisiana Family Forum
	25	Family Protection Lobby – Maryland
	26	Massachusetts Family Institute
	27	Minnesota Family Council
	28	New Jersey Family Policy Council
	29	North Carolina Family Policy Council
	30	Stronger Families for Oregon
	31	American Family Association of Pennsylvania
	32	The Family Research Institute of Wisconsin
Religious Organizations		
	1	Presbyterian Church (U.S.A.)
	2	General Board of Church and Society of United Methodist Church
	3	Southern Baptist Ethics & Religious Liberty Commission
	4	American Council of Churches*
Total All Organizations	52	

*Members of American Council of Churches: African Methodist Episcopal Church, Malankara Orthodox Syrian Church, The African Methodist Episcopal Zion Church, Mar Thoma Church, Moravian Church in America Northern Province and Southern Province, Alliance of Baptists, American Baptist Churches in the USA, National Baptist Convention of America, The Antiochian Orthodox Christian Archdiocese of North America, National Baptist Convention, U.S.A., Diocese of the Armenian Church of America Inc., National Missionary Baptist Convention, Christian Church (Disciples of Christ) of America, Christian Methodist Episcopal Church, Orthodox Church in America, Church of the Brethren, Patriarchal Parishes of the Russian Orthodox Church in the USA, The Coptic Orthodox Church in North America, Philadelphia Yearly Meeting of the Society of Friends, The Episcopal Church, Evangelical Lutheran Church in America, Polish National Catholic Church of America, Friends United Meeting, Progressive National Baptist Convention Inc., Greek Orthodox Archdiocese of America, Reformed Church in America, Hungarian Reformed Church in America, Serbian Orthodox Church in the U.S.A and Canada, International Council of Community Churches, The Swedenborgian Church, Syrian Orthodox Church of Antioch, Korean Presbyterian Church in America, Ukrainian Orthodox Church of America, and United Church of Christ.

a combined 287.6 million dollars to state and federal political campaigns (Open Secrets, 2014). Presumably, these contributions were intended to influence the outcome of legislation. Still others claim that UIGEA has not stopped the growth in online gaming and that the winners of UIGEA are non-U.S. firms that can evade UIGEA (Weinberg & Pruit, 2006).

We are unaware of any studies that have estimated the net costs and benefits of UIGEA. One previous study investigated the relationship between online gaming and retail brick-and-mortar gaming firms prior to UIGEA (Philander, 2011). This study found that for every dollar spent on online gaming in America, 27–30 cents was a cannibalization of revenues from the retail brick-and-mortar gaming firms. Thus, brick-and-mortar

gaming and online gaming are partial substitutes. Regulation that diminishes (expands) competitive online gaming will increase (reduce) the revenues of brick-and mortar-firms.

In our study, we provide several insights with regard to the impact of online gaming regulation on public retail brick-and-mortar firms in the United States and their U.S. suppliers. We refer to these firms as brick-mortar and supplier firms (BMS firms). We investigate the impact of UIGEA, as well as the later interpretation of UIGEA by administrative rulemaking and actions by the DOJ. We do not attempt to measure the impact of these actions on the online gaming firms.

To conduct our event study, we examine the *Congressional Record*, the *Wall Street Journal*, *Forbes*, *The Federal Register*, *The New York Times*, and online press releases to identify informational events that might provide investors with value-relevant information about the content of and likelihood of UIGEA being passed into law. Additionally, we examine these publications, and others, to identify administrative rulemaking and DOJ actions that are likely to lead to a more precise interpretation of the impact of the Act on BMS firms. We use the capital asset pricing model to determine normal returns for firms over the informational event periods. We define abnormal returns (ARs) as the actual returns minus the normal returns predicted by the model. The ARs measure the overall change in the market value of gaming firms as a result of the UIGEA, as well as related rulemaking and DOJ actions. We conduct cross-sectional analyses of the ARs to determine how the wealth effects of UIGEA vary depending on the nature of the firm.

Our market-based approach provides investors' assessments of expected future regulatory costs and benefits as reflected in current stock prices. It also gives evidence on the types of firms that investors expect to benefit the most from regulation. Such delineation may help managers better understand the benefit or cost of regulation to their firms.

The remainder of the section proceeds as follows. Following, we describe the perspective of the American Gaming Association on the desirability of regulating Internet gaming in the United States[1] and provide an interpretation of changes in the regulatory climate over time. This discussion provides a backdrop to the subsequent discussion of individual informational events. Then, we describe the UIGEA and administrative law associated with it. To conclude the section, we describe the DOJ actions that provided information to the market about the form that enforcement of the UIGEA would take.

Desirability of Internet Gaming Regulation and Overview of Regulation Timeline

The American Gaming Association has stated that the best outcome for consumers and gaming companies would be a regulated Internet gaming market where a limited number of firms, certified by the government to operate, would follow specific guidelines and rules (American Gaming Association, 2006). These guidelines and rules would safeguard against underage and addictive gaming. These rules would also protect gamblers from unscrupulous companies that do not provide the product that they advertise. The industry has never supported the total elimination of Internet gaming. The American Gaming Association adopted this position because it believes this regulation will lead to growth in revenues for U.S. gaming firms, as well as increased employment. Hence, the industry supports regulation that is conducive to the growth of its existing membership (Stewart, 2006, 2010).

Regulation of Internet gaming and the impact of regulation on BMS firms has evolved over time. The Wire Act of 1961 was originally

[1]As of 2014, the U.S. gambling firms and their equipment suppliers that are members of the American Gaming Association include: Aristocrat Technologies, Inc., Bally Technologies, Inc., Boyd Gambling Corporation, Caesars Entertainment Group, Churchill Downs, Inc., Gambling Partners International, Gaughan South LLC/dba/South Point Hotel & Casino, GTECH, International Game Technology (IGT), Isle of Capri Casinos, Inc., JCM American Corporation, Konami Gambling, Inc., Las Vegas Sands Corp., MGM Resorts International, Multimedia Games, Inc., Penn National Gambling, Inc., Pinnacle Entertainment, Inc., Resorts World New York, Rock Ohio Ventures LLC, Station Casinos, and WMS Gambling Inc.

intended to regulate the wire transfer of funds for illegal gaming and for many years was the only federal legislation that applied to Internet gaming. Prior to UIGEA, however, retail gaming executives were unclear about the applicability of the Wire Act to Internet gaming. Uncertain whether Internet gaming was clearly legal or clearly illegal, the brick-and-mortar gaming firms took a conservative position and did not enter the Internet gaming market prior to UIGEA (Stewart, 2010). Not surprisingly, these firms faced competition from the growing presence of firms solely devoted to providing Internet gaming, who were willing to bear the risk that at a future date their business model might be deemed unlawful. Hence, at the time UIGEA was introduced into Congress, brick-and-mortar firms would potentially gain from the elimination of Internet gambling and, therefore, the elimination of competition from Internet gaming firms (Philander, 2011).

From 1995 to 2006, there were many failed attempts to create federal legislation that would regulate the Internet gaming market. Then, in 2006, the UIGEA was passed into law. The brick-and-mortar firms presumably supported UIGEA because it held the promise of reducing competition from the online gaming industry. The following section describes the UIGEA in greater detail.

Description of the UIGEA and Its Interpretation Through Administrative Rules

The UIGEA was signed into law by President Bush on October 13, 2006, just two weeks after it was attached as a conference report and passed in the House on September 29, 2006, and passed by the Senate the following day. The UIGEA was the first federal legislation enacted to regulate Internet gaming by ensuring that the Internet would not be used as a mechanism to evade federal and state gaming laws. Following is a five-part summary of the major points of the legislation (Yeh & Doyle 2012):

1. Prohibits Internet gambling operators from accepting money related to any online gambling that violates state or federal law.
2. Requires the Department of Treasury and the Federal Reserve Board to issue regulations within nine months after enactment, which will oblige financial systems to block payments for unlawful Internet gambling.
3. Does not make any gambling activity illegal that was previously legal, and does not make any gambling activity legal that was previously illegal.
4. Preserves and facilitates the right of every state to determine and enforce the gambling policies that will apply within state borders.
5. Requires that, within 270 days, the Federal Reserve Board, in conjunction with Department of Treasury, will issue clarifying rules. Input from the public and industry was to be allowed during open meetings by the Federal Reserve and the Department of the Treasury. (Final rulemaking did not occur until 12/11/2008.)

Schmitt (2008) argues that the UIGEA actually does nothing to address the legality of online gambling or describe what constitutes "unlawful Internet gambling." Instead, the Act is aimed at cutting off the flow of money to online gambling by making it illegal to accept payments or money transfers from persons involved in any form of prohibited Internet gambling. In other words, the intent of the Act is to block offshore payment processors and casinos from having access to U.S. banks and credit card companies, thus making it impossible for Americans to put money into online gambling accounts. Claburn (2011) emphasizes that UIGEA makes it a crime for gambling businesses to knowingly accept most forms of payment for illegal gambling. Illegal gambling is defined as any gambling that violates federal of state law.

Discussion of Department of Justice Actions

Uncertainty about the reach of the UIGEA was not resolved until administrative rules were issued approximately two years after UIGEA was passed by Congress. From the period 2006 to 2010, the DOJ seemed unsure about its

enforcement strategy. The first DOJ action was referred to by the press as Black Friday (Claburn 2011; Holloway 2014; Richtel 2011; Bloomberg 2011). On Friday, April 15, 2011, the DOJ and the Federal Bureau of Investigation (FBI) conducted unannounced raids and initiated action against three major online poker firms — PokerStars, Full Tilt Poker,and Absolute Poker/Ultimate Bet—as well as eight associated financial institutions. These firms were indicted on charges of illegal gaming and money laundering. The individuals who assisted these firms were arrested. UIGEA makes it a federal crime for gaming businesses to "knowingly accept" payment "in connection with the participating of another person in unlawful Internet gaming." The three Internet companies in question had continued to offer online poker services in the United States, subsequent to passage of the UIGEA. To get around the prohibition on U.S. banks from opening U.S. bank accounts that received proceeds from U.S. gamblers, the gaming companies in question carried out fraudulent transactions designed to trick the banks (Bana, 2011; Clayburn, 2011; and Holloway, 2014.) Thus, Black Friday significantly reduced competition from international Internet gaming firms.

The second action by the Department of Justice was dubbed the *DOJ Flip-Flop* by the press and occurred on December 23, 2011. The DOJ Flip-Flop was a ruling that not all Internet gaming is illegal. Thus, the DOJ Flip-Flow appeared to reverse the DOJ's earlier decision and signaled that Internet gaming was legal if allowed by state law, as long as betting did not cross state lines (Vardi, 2011; Wyatt, 2011). Although it was widely acknowledged that this ruling did not open the floodgates to Internet gaming, it did open the possibility that future DOJ rulings might clarify further the types of Internet gaming that are legal. This ruling would likely benefit BMS firms in two ways. One, BMS firms were now poised to compete in the Internet gaming market (Philander, 2011). Two, immediately after the passage of UIGEA, Internet gaming shifted from U.S. based Internet firms to foreign-based firms (Weinberg & Pruit 2006). That is, UIGEA eliminated domestic competition, but increased foreign competition. Hence, lawful Internet gaming would allow BMS firms to compete with overseas Internet gaming firms. The American Gaming Association stated that they were now in favor of regulated Internet gaming (Philander, 2011).

Our article proceeds as follows. The following section reviews the event study literature and summarizes the individual regulatory events associated with the UIGEA and the DOJ actions. We also discuss the likely impact of each of the UIGEA and the DOJ actions on gaming firms. "Event Study Research Design" explains our research design, including a description of the sample firms, the event study methodology, and the types of gaming firms expected to receive the greatest benefit from these regulatory actions. Results of our event study follow. "Conclusion" summarizes the findings and contributions of the research.

Previous Event Studies

The usefulness of event study methodology is well established in the hospitality literature. Previous event studies have examined a variety of topics, including the wealth effects of gaming company mergers (Bloom, 2010), IT news in the hospitality industry (Kim et al., 2009; Lee & Connolly, 2010), and the impact of terrorism on hospitality stocks (Chang & Zeng, 2011).[2] There are also two studies that have used event study methodology to examine the impact of regulation on hospitality firms. One study examines the impact of smoking bans on hospitality firms (Tomlin, 2009), and the other examines the impact of the Travel Promotion Act on firm value in the hotel sector (Johnson

[2]Additional event studies in the hospitality literature include initial public offerings in the hospitality industry (Canina 1996, Canina and Gibson 2003), acquisitions in the lodging industry (Canina 2001; Chatfield et al., 2012; Ma et al. 2011, Oak & Andrew 2006, Oak & Dalbor 2009), the impact of options listing (Atkinson et al., 1998; Kwansa, 1994), dividend increases (Borde et al., 1999), the SARS outbreak (Chen et al., 2007), new gambling openings (Nicolau, 2002), cash dividend announcements (Sheel and Zhong 2005), going private transactions (Wallace, 2004), the impact of delisting stocks (Leung et al., 2013), and the impact of weekly RevPAR announcements (Bloom & Zheng, 2013).

et al., 2015). There are also numerous examples of event studies outside the hospitality literature that have examined the effects of regulation on other industries.[3]

We develop four hypotheses about the economic impact of the UIGEA, subsequent rulings, and DOJ actions on gaming firms. To test the hypotheses, we measure changes in the value of the firms' equity in response to the regulatory events. In cross-sectional analyses, we also use the percentage of each firms' revenue that comes from retail gaming to explain the size of a given firm's stock return.

Individual Events and the Effect of Regulatory Change

The previous discussion indicates that there is a great deal of confusion about the effect of major regulatory actions on the gaming industry. One reason the confusion arises is the complexity of the UIGEA, administrative rules, and DOJ actions. A second reason is that the regulation and its implementation occurred over a long period of time. A close examination of the American Gaming Association's White paper, *Statement of Preferred Policy*, provides a good summary of what the national association believes has been the effect over time of online gaming on BMS firms. Their view holds that in the early days of Internet gaming (i.e., before UIGEA), BMS firms were very reluctant to invest in, or enter, the area of online gaming. Hence, almost all of the online gaming was conducted by non-U.S. firms (Stewart, 2011). Thus, passage of the UIGEA was unlikely to have a negative impact on BMS firms because the firms were not heavily involved in activities that the UIGEA restricted. However, passage of UIGEA did constitute a multibillion dollar loss for international companies involved in Internet gaming (Bowers, 2006; Tiech, 2008). Philander (2011) provides insight about the impact of the UIGEA. Philander found that in the pre-UIGEA period, every dollar spent on Internet gaming led to approximately a $0.27 to $0.30 reduction in the revenues received by BMS firms. From this, we predict that the UIGEA will have a significant, positive, impact on BMS firms because consumers that might not be able to gamble on the Internet as easily choose to partially substitute their activities by visiting BMS firms.

On December 12, 2008, the Federal Reserve, in conjunction with the Department of Treasury, issued final rules with regard to the interpretation of the UIGEA. The final rulemaking received relatively little press coverage. This lack of attention is likely due to two factors. One, there were multiple public hearings about the rules between the passage of the UIGEA and the rulemaking. Thus, investors had many observations that could lead to the forming of expectations about the likely form of the rules. Two, rulemaking was delayed several times, and the final rules were issued two years late. If the final rulemaking were to impact the BMS firms, it was not clear what the direction the effect would take. The rulemaking announcement might be good news to the BMS firms if UIGEA is more beneficial to BMS firms than investors have anticipated. Otherwise, the rulemaking announcement might be bad news to the BMS firms if UIGEA is less beneficial to BMS firms than investors have anticipated. Thus, we offer a two-sided prediction about the effects of rulemaking announcements on firm value.

The current opinion of the American Gaming Association is that the best thing for the gaming industry would be a regulated gaming market that protects consumers from disreputable gaming firms and yet allows existing U.S. gaming firms to expand into Internet gaming. This, it is believed, would protect underage and problem gamblers and yet allow for employment and revenue growth for legitimate businesses that provide a service that the adult public desires. Because of the changing industry environment since the initiation of UIGEA, it is unclear whether

[3]Studies of the impact of regulations on shareholder wealth include analysis of a variety of topics: U.K.electricity industry regulation (Dnes et al., 1998), OSHA-imposed dust standards on textile firms (Hughes et al., 1986), the impact of product recalls (Jarrell & Peltzman, 1985), merger regulations (Schipper & Thompson, 1983), environmental regulation and disclosure (Blacconiere & Patten, 1994), and the effect of the Bank Holding Company Act (Aharony & Swary 1981), to name a few.

DOJ actions will have a positive or negative effect on BMS firms. The DOJ ruling on Black Friday signaled a growing clamp-down on Internet gaming. If the BMS firms were in a similar situation in 2011 as they were in 2006 this might be good news because of the negative impact on non-U.S. firms that have been cannibalizing their revenues. However, if the BMS firms have changed in the fashion that the American Gaming Association white paper suggests, then the BMS firms might wish to see online gaming clearly legalized so that they can enter this market. In that case, they will be negatively impacted by Black Friday (Stewart, 2011). Similar logic applies to the DOJ Flip-Flop in which the DOJ states that some Internet gaming is now legal. The impact of this ruling could be positive or negative. We examine the impact of UIGEA on the gaming industry by examining the sign and magnitude of changes in equity values in response to events associated with the UIGEA.

A major difficulty associated with measuring the impact of regulation on firm values is the selection of the appropriate informational events. Specifically, at what times, and in what form, does the market receive information useful to the forming of expectations about future firm values? We obtain informational events and dates from an examination of *The Wall Street Journal*, *The Congressional Record* as reported by GovTrack.us (2014), and *The New York Times*. For the UIGEA and its administrative rules, we examine two different windows of information. We disregarded the large number of potential informational events about legislation. Specifically we did not examine the large number of attempts at introduction of legislation to regulate gaming of the Internet prior to the UIGEA because we believe that each of the many unsuccessful attempts at creating legislation would have a negligible impact on beliefs about the future risks and returns to investments in the gaming industry.

The first informational event we consider is the passage of the UIGEA by the House and the Senate. On September 29, 2006, the UIGEA was added as a conference report to the SAEPA and passed in the House by a vote of 409 to 2. The following day, on September 30, the UIGEA was added as a conference report to the SAEPA (in the Senate and then passed in the House) by a unanimous vote (GovTrack.us, n.d.). Because these actions occurred so close to each other, we view them as one event. Because both votes in Congress on the conference report had almost unanimous bipartisan support, we conclude that the actual signing of the bill by the president did not provide additional information to the market because it was unlikely that the president would veto the bill.

Our second informational event is the UIGEA rulemaking by the Federal Reserve and the Department of the Treasury. This rulemaking put flesh on the bones of the UIGEA. This rulemaking occurred on December 11, 2008.

The final two events are related to actions by the judicial branch. These events include: (a) the indictment by DOJ of Internet gaming firms for money laundering and unlawful Internet gaming and (b) the DOJ Flip-Flop in which the DOJ stated that not all Internet gaming is illegal. We posit that the impact of Black Friday, the indictment of online gaming firms, could have either a positive or a negative effect on BMS firms. This is because the action simultaneously destroys online competitors that were cannibalizing BMS revenue and it reduces the likelihood that the BMS could find growth through expansion into online gaming. We also posit that the DOJ Flip-Flop will have a positive impact upon the BMS firms because it indicates that some online, regulated gaming would be deemed legal.

Hypotheses

Consistent with our previous discussion, we offer four hypotheses about Internet gaming regulation. The first hypothesis is a test of the most important question in this article. Here, we examine whether the introduction of Internet gaming regulation has a significant impact on the BMS firms. If the results of this hypothesis are insignificant, we conclude that managers of BMS should be unconcerned about regulation of Internet gaming. In contrast, if UIGEA has a positive impact on firm value, then managers of

BMS firms should support regulation of Internet gaming. Thus the first hypothesis (H1A) is:

H1A: *Attachment of the UIGEA to the SAEPA by Congress is associated with a positive impact on Gaming firm stock performance. Sign is positive*.

The second hypothesis tested in this study examines whether administrative lawmaking by the Federal Reserve and the Treasury had a significant impact on the BMS firms. This test examines the effect on firms of postlegislative administrative rules associated with the implementation of the UIGEA. We ask whether these administrative rules had a significant modifying effect on the original UIGEA legislation. This is relevant to managers of BMS firms because the impact of administrative law rulings is often significant. Thus the second hypothesis (H1B) is:

H1B: *Administrative law making by the Federal Reserve and the Treasury is associated with a significant impact on Gaming Firms' stock performance. Sign is unknown*.

The third and fourth hypotheses examine whether the Department of Justice (DOJ) rulings on the interpretation of the UIGEA are likely to impact BMS firms. There were two major DOJ rulings associated with the implementation of the UIGEA. We refer to the first DOJ ruling as Black Friday and the second as the Flip-Flop. The fact that administrative rule makers change their minds, as evidenced by the Black Friday and Flip-Flop rulings, highlights the cost that regulatory uncertainty imposes on BMS managers as they plan and implement corporate strategies. These two rulings, alone, significantly impacted both the nature of competition in the industry and the markets that are open to BMS firms. Thus the third and fourth hypotheses become H1C and H1D.

H1C: *The Department of Justice Black Friday Ruling is associated with a significant impact on gaming firm stock performance. Sign is unknown*.

H1D: *The Department of Justice Flip-Flop is associated with a positive significant impact on gaming firm performance because some regulated online gaming will be legal. Sign is positive*.

Cross-Sectional Determinants of Market Reaction

We also develop one cross-sectional hypothesis with regard to the impact of regulation on BMS firms. We expect that the impact of the regulation will be greater for firms that have a greater percentage of their revenues from retail, non-online gaming. We make this prediction because firms that have other sources of revenue will be impacted less by the UIGEA. Additionally, finding significance for this variable would provide support for the results of Philander (2011) who found online gaming to be a partial substitute for casino gaming. Knowledge of the differential impact of the regulation on various subsectors of the gaming industry helps managers to devise more targeted, and hence, more effective and efficient corporate strategies. For example, if exposure is small, managers might wish to spend very little effort devising marketing and investment strategies that address competition from Internet gaming. It might also help to explain why some managers of BMS firms seem to be very concerned about online gaming regulation, whereas other managers are seemingly unconcerned.

Thus, we predict that,

H2A: *Ceteris paribus, firms with a higher percentage of their revenues from retail gaming will have a greater exposure to regulation and thus experience a greater impact from UIGEA*.

Thus, we also predict that,

H2B: *Ceteris paribus firms with a higher percentage of their revenues from retail gaming will have a greater exposure to regulation and thus experience a greater impact from the DOJ Flip Flop*.

EVENT STUDY RESEARCH DESIGN

This section discusses the data and research design used in the study.

Sample Firms

Our initial sample consisted of U.S.-based, publicly traded firms in the gaming industry, including the known suppliers of gaming hardware and software. We began with a list of firms in Standard Industrial Codes (SIC) 7900 to 7999 and NAIC codes 713210 and 713290. From this list, we retained firms whose stock was traded on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), or the National Association of Security Dealers Automated Quotation Service (NASDAQ). We restricted our sample to public firms with stock traded on U.S. equity markets in order to be able to examine the impact of UIGEA on firm value.

Examinations of the wealth effects of regulation are complicated if there is the leakage of information about the regulation in advance of the regulatory events or if there are confounding firm-specific events, such as mergers, bankruptcy, earnings announcements, and dividend announcements. Therefore, *The Wall Street Journal* and *The New York Times* were examined to detect either the early release of information or confounding events. This examination revealed that during the time that the bill was considered, there was ongoing discussion of the implications and possibility of UIGEA. These discussions generally followed the legislative actions and could be considered an analysis of the proposals. However, we were not able to discern specific events that would have been likely to significantly alter investor expectations about UIGEA other than the actions listed in Table 3.

One of the gaming firms for which stock price data was available, Trump Entertainment Resorts, had confounding events during the event testing periods. Trump Entertainment went through bankruptcy-reorganization proceedings four times, in 1991, 1992, 2004, and 2009 (O'Connor, 2011). We removed this firm from our sample because it was thought that news associated with the multiple bankruptcies overshadowed industry effects from the regulatory events associated with the UIGEA. This left us with a sample size of 18 to 25 firms, depending on the event examined. The number of firms in the sample varied through time due to merger and acquisition activity that occurred over the 5-year period of this study. No other merger and acquisition activity occurred during the event period examined in this study. Table 4 provides a list of the final firms. The number of firms in the sample is small relative to the sample size in most event studies. A small sample size implies that the power of our test statistics will be lower than that of the typical event study. Thus, our small sample sizes bias us against finding significant results.

Test of Market Reaction

The first hypothesis is tested by examining the overall industry market reaction to the four

TABLE 3. Selected Chronological Listing of SAEPA, UIGEA and Major Regulatory Occurrences.*

Name of Event	Informational Event Tested	Number of Days in Event Window	Date	Action
SAEPA			03/14/2006	Introduction in House
SAEPA			05/04/2006	Pass House
SAEPA			09/14/2006	Pass Senate
UIGEA added in conference Report to SAEPA	Event 1	4	09/29/2006	Report Passes House 409 in favor, 2 opposed
	Event 1 continued		09/30/2006	Report Passes Senate Unanimous
UIGEA Administrative Rules	Event 2	3	11/12/2008	Final UIGEA Administrative Rules released
Black Friday	Event 3	3	04/15/2011	Department of Justice indictment of 11 firms, including 4 Internet gambling firms
Flip-Flop	Event 4	3	12/23/2011	Department of Justice ruling that not all Internet gambling is illegal

*Many previous legislative actions related to UIGEA are listed in Table 1.

TABLE 4. Ticker Symbols and Names of the 26 Gaming Firms Available for Testing Events 1, 2, 3, and 4.

Firm #	Name	UIGEA	Rulemaking for UIGEA	DOJ Black Friday	DOJ Flip- Flop
1	AMERISTAR CASINOS INC	X	X	X	X
2	AZTAR CORP	X			
3	BALLY TECHNOLOGIES INC	X	X	X	X
4	BOYD GAMBLING CORP	X	X	X	X
5	CANTERBURY PARK HOLDING CORP	X	X	X	X
6	CENTURY CASINOS INC	X	X	X	X
7	EMPIRE RESORTS INC	X	X	X	X
8	HARRAHS ENTERTAINMENT INC	X			
9	INTERNATIONAL GAME TECHNOLOGY	X	X	X	X
10	ISLE OF CAPRI CASINOS INC	X	X	X	X
11	LANDRYS RESTAURANTS INC	X	X		
12	LAS VEGAS SANDS CORP	X	X	X	X
13	M G M RESORTS INTERNATIONAL	X	X	X	X
14	M T R GAMING GROUP	X	X	X	X
15	MULTIMEDIA GAMES HOLDING CO INC				X
16	PENN NATIONAL GAMBLING INC	X	X	X	X
17	PINNACLE ENTERTAINMENT GROUP IN	X	X	X	X
18	PROGRESSIVE GAMBLING INTL CORP	X	X		
19	RIVIERA HOLDINGS CORP	X	X		
20	SANDS REGENT	X			
21	SCIENTIFIC GAMES CORP	X	X	X	X
22	SHUFFLE MASTER INC	X	X	X	X
23	STATION CASINOS INC	X			
24	TRANSACT TECHNOLOGIES INC	X	X	X	X
25	W M S INDUSTRIES INC	X	X	X	X
26	WYNN RESORTS LTD	X	X	X	X
Total		25 firms	21 firms	18 firms	19 firms

informational events. These potential informational events, as discussed earlier and summarized in Table 3, are associated with the introduction, passage, and signing into law of Travel Promotion Act. For each of the four event dates, the market reaction was determined by measuring daily abnormal returns (i.e., the difference between actual and expected returns). To control for the effects of market-wide fluctuations, the market model is used to measure expected returns:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it},$$

where

R_{it} is the return for the ith Gaming firm on day t,
α_i is the intercept for the ith Gaming firm,
β_i is the slope coefficient for the ith Gaming firm
R_{mt} is the return on an equal-weighted market portfolio on day t
e_{it} is the error term with mean zero

Following the conventions of previous studies (e.g., Hughes et al., 1986; Jarrell & Peltzman, 1985) and the findings of Brown and Warner (1980, 1985); and Binder and Summer (1985), an equal-weighted market index is used as a proxy for the market rate of return. The parameters α_i and β_i were estimated for the event by using 255 trading days of daily return data. Generally speaking, in event studies, we want the parameters of the model to be estimated over a short period before the event occurs. This involves a trade-off. The closer the estimation period is to the event period, the less likely it is that sample firm betas have changed due to changes in leverage, management strategy, and firm investments, etc. However, estimation data from a period too close to the event period may be contaminated by abnormal returns that were caused during previous regulatory announcements or pro-

ceedings. We chose to estimate the parameters of the model using 255 days of data ending 40 days prior to each informational event. We did this to, as much as possible, avoid confounding information about UIGEA that could potentially bias the estimates. Once the parameters α_i and β_i had been estimated for each firm, the Abnormal Returns (daily prediction errors) for firm i was calculated as follows:

$$AR_{it} = R_{it} - [\alpha_i + B_i R_{mt}],$$

where AR_{it} is the abnormal return for firm i on day t.

We examine abnormal returns for the day before, day of and day after the informational event. For Event 1 this approach implies a 4-day event window because the first event includes the attachment and vote in the House on the 29th and the attachment and vote in the Senate on the 30th. We include these as a single event because they happen in quick succession, and both may add information to the market. For Event 2, 3 and 4, we use the typical 3-day window that includes the event day and the two trading days immediately before and after the event. Inclusion of the trading day prior to the event controls for information leakage that may occur if some market participants are privy to discussions among policy makers prior to public announcement of policy actions. Inclusion of the trading day after the event accounts for late arrival of information to the market as well as time for market participants to process the information. A window that is too large will include extraneous information. Conversely, a window that is too small will not fully capture the effects of information leakage or slow market adjustment. We chose a short window of 4-days for Event 1 and a window of 3-days for Events 2, 3 and 4. Thus, our results are conservative and might underestimate the impact of UIGEA and the interpretative actions associated with UIGEA.

The 4-day cumulative abnormal returns for each firm for Event 1 were computed as below:

$$CAR_i = \sum_{T=-1}^{+2} AR_{\text{it}},$$

where

CAR_i is the cumulative abnormal return for firm i.
AR_{it} is the abnormal return for firm i on day t.
$t = 0$ is the first day of Event 1, the House action on the UIGEA conference report.
$t = 1$ is the second day of Event 1, the Senate action on the UIGEA conference report.

Each firm's CAR_i for Events 2, 3, and 4 were computed by cumulating AR_{it} over the 3-day window, -1 to $+1$, where 0 is the event date.

To determine the average overall impact of Event 1 (Events 2, 3, and 4) on the industry, we calculate the 4-day (3-day) cumulative average abnormal return by summing across n firms in the sample and dividing by the number of firms in the sample that are available for the event:

$$CAAR = \sum_{i=1}^{n} CAR_i / n,$$

where

$CAAR$ is the cumulative average abnormal return across all n firms in the Sample
CAR_i is the 4-day (3-day) cumulative return for firm i around Event 1 (Events 2, 3, and 4)

To examine whether each informational event had a significant average return effect on the industry, a test of the null hypothesis that the 4-day (Event 1) or 3-day (Events 2, 3, and 4) cumulative average abnormal returns across firms equals zero is performed by calculating a standard Z-statistic, a Patel Z-Statistic, and a portfolio time series Crude

Dependence Adjusted (CDA) test statistic. We provide three statistics for the following reasons. One, the standard Z-statistic is well known to all researchers and thus may be a useful benchmark. Second, the Patel Z-Statistic is the most commonly used statistic in the event study literature and is familiar to most finance professionals. Finally, the CDA is a contemporary test statistic that adjusts for cross-sectional dependence arising from the fact that each firm's events occur on the same days. Bloom (2011) and Brown and Warner (1980, 1985) argue that, under these circumstances, the CDA test is the most appropriate and reliable test of significance.

Cross-sectional Analysis

Cross-sectional analysis is employed to test the second hypothesis that firms with a greater percentage of their revenues from retail gaming will be more impacted by the UIGEA. We chose to run regressions only for the two significant events. We did this because it is difficult to interpret regression results for insignificant events.

We estimate the following multiple regression model for all available observations in the sample:

$$\text{Model} = CAR_i = \gamma_0 + \gamma_1 \text{PERCENT}_i,$$

where PERCENT_i is the percentage of revenue that the firm received directly from gaming activities in the year ending closest to, but before the event date; and γ_0 and γ_1 are the estimated intercept and the slope coefficients, respectively.

Our hypothesis predicts that the estimated coefficient on PERCENT, γ_1, will be significant because BMS firms often have revenues from other assets, such as hotels and restaurants, that may not be as heavily impacted as assets that are directly associated with gaming assets. The results of the cross-sectional analysis are discussed in "Results Cross-Sectional Analyses" in the following section.

RESULTS

Results of Event Testing

Table 5 presents our test of hypotheses H1A–H1D, which predicts that UIGEA has a positive impact on BMS firms and that

TABLE 5. Cumulative Average Abnormal Return (CAAR) Over a 4-Day or 3-Day Event Window Around the Event.

Event Tested	Number of Firms[1]	4-Day CAAR[2]	3-Day CAAR[3]	Pos/Neg[4]	Generalized Z-Statistic[5] (*p*-Value)	Patel Z-Statistic[6] (*p*-Value)	Portfolio Time Series CDA[7] (*p*-Value)
Passage of UIGEA	25	2.86%		19/6	2.793 (0.0026)	4.232 (0.0001)	1.751 (0.0400)
Federal Reserve Board Rulemaking	21		−0.98%	13/8	1.319 (0.0935)	−0.523 (0.3005)	−0.441[3] (0.3296)
Black Friday	18		1.77%	15/3	3.026 (0.0012)	1.957 (0.0252)	1.071 (0.1420)
DOJ Flip- Flop	19		3.55%	14/5	2.308 (0.0105)	3.490 (0.0002)	2.415 (0.0079)

[1] Number of the firms used in the event analysis.

[2] 4-Day CAAR is the average abnormal return for the 25 firms over the 4-day event window, which consists of the day before, 2 days of the event and day after the event. Abnormal returns are calculated using an equal weighted market index.

[3] 3-Day CAAR is the average abnormal return for the 25 firms over the 3-day event window, day before the event day of the event and day after the event. Abnormal returns are calculated using an equal weighted market index.

[4] The number of firms experiencing a positive abnormal return relative to a negative abnormal return for the event.

[5] The generalized Z-Statistic tests Hypothesis 3 that the 4-Day CAAR = 0.

[6] The Patel Z-Statistic tests Hypothesis 3 that the 4-Day CAAR = 0. The Patel Z is the most commonly used test statistic in event studies. It is a parametric, standardized Normal test, which assumes that excess return data are normally distributed and cross-sectionally independent.

[7] The CDA Statistic tests Hypothesis 3 that the 4-Day CAAR = 0. CDA is the crude dependence adjustment portfolio time series test. It is the most appropriate test for use in this study because all of the events happen to the firms at the same time. Therefore cross sectional dependence is likely. (See Bloom 2011.)

interpretative administrative rulings and DOJ actions created a positive significant impact on the equity values in the gaming industry.

The CAAR for the first event, the attachment of UIGEA to the SAEPA, is 2.86% at a level of significance of .04 for the CDA test. The CDA test value generally agrees with the other two test statistics provided. In other words, the equity values of our sample firms equity increased by an average of 2.86% in response to the informational event that provided the greatest indicator that UIGEA would become law. Thus, we conclude that UIGEA as it was passed in 2006 had a significant positive impact on the publicly traded brick-and-mortar and suppliers (BMS) in our sample. We further conclude that the view presented by Philander (2011) and the American Gaming Association is correct. Specifically, in the early days of Internet gaming, the BMS firms had not invested in the Internet. The UIGEA effectively reduced competition from a substitute good and increased the wealth of the BMS firms. This might help explain why the BMS firms did not actively fight UIGEA in 2006.

The CAAR for Event 2, the final rulemaking, is −.98% and is insignificant. Thus, the equity values of BMS firms were not impacted by this rulemaking announcement. It is likely that after many public hearings over a two-and-a-half-year time span, much of the specifics about the rules that were to be announced had already been impounded by the market.

The CAAR for Event 3, the DOJ indictment of firms for illegal Internet gaming and money laundering, is 1.77% at a level of significance of .1420 for the CDA test value. We note that the CDA test value for Black Friday differs substantially from the Z- statistic (p-value = .0012) and Patell-Z (p-value = .0252) tests. Because the CDA test controls for cross-sectional dependence, we focus on it rather than asserting an effect where none exists. Black Friday might not have been significant. The indictment had two potentially offsetting effects on the BMS firms' future revenues. On one hand, the indictment destroyed several online competitors to the BMS, but on the other hand, it seemed to eliminate the any possibility of brick-and-mortar firms being able to enter the Internet market. Thus, we conclude that the DOJ indictments did not impact the equity values of BMS firms.

The CAAR for Event 4, the DOJ's reversal of its stance about what constitutes illegal gaming, is 3.55% and is significant at the .0079 level for the CDA test value. In other words, the DOJ ruling that some forms of Internet gaming are legal increases the value of BMS firms significantly. This result might seem surprising because the original adoption of UIGEA had also been positive. But this paradox fits the America Gaming Association's view that the industry had changed over the years since adoption of UIGEA in 2006 (Stewart, 2011). Early on, firms had not invested in Internet gaming because they believed that such activities were of questionable legality. However, investors were concerned that the firms were losing a great deal of money to new, online, gaming firms that were willing to bear the risk of the activities' questionable legality. When the UIGEA came along, investors were pleased because they thought competition from the online firms would be substantially reduced, and BMS firms would see revenue increases over time. Later, the BMS firms and their investors realized that a highly regulated market might eliminate much of the competition from international firms, yet allow U.S. BMS firms to experience revenue growth from online gaming

Results of Cross-Sectional Analyses

Tables 6A and 6B present the results of our cross-sectional regression of CARs on the percentage of revenue from retail gaming for significant Events 1 and 4, respectively. The results of the cross-sectional analysis can be interpreted in light of the evolution of the gaming industry over the time of this study as discussed in the introduction section of this article. For Event 1, the percentage of revenues variable is significant at the 1% level. This is consistent with the idea that BMS firms gain more if they are heavily exposed to cannibalization of their revenues by Internet gaming firms at a time when they had no presence in the

TABLE 6A. Regression of 4-day CAR_i[1] Around Event 1 on the Percent of Revenues the Firm Received from Retail Gambling.

	Coefficient	*t*-Statistic[5]	*p*-value
Intercept	−0.00184	−0.13961	0.890182
PERCENT	0.059927	2.851044	0.009041
$R^2 = 0.261126$[3]			
Adjusted $R^2 = 0.229001$			
Mean PERCENT for nonsupplier firms = 70.56%			

[1] CAR_i is the 4-day cumulative abnormal return for firm around Event 1.

[2] PERCENT is the percentage of revenues that the firm received from retail gambling, as reported in the annual report for year-end 2005. This information would have been available to all investors valuing the firms at the time of the event in 2006.

[3] The R^2 (i.e., the percent of variability in the CARs that is explained by the variability in PERCENT), is low. The low R^2 may be due to two factors. One, the study has a relatively small sample size making it more difficult to obtain high R^2s. Two, due to the comingling of food, beverage and hotel activities within the brick-and-mortar firms the reported percentage of revenues associated with gaming, PERCENT, may not be precise. Hence, explanatory power may be limited.

TABLE 6B. Regression of 3-Day Car_i[1] Around Event 4 on the Percent of Revenues the Firm Received from Retail Gambling.

	Coefficient	*t*-Statistic[5]	*p*-value
Intercept	0.02785	1.651856	0.116913
PERCENT	−0.016228	0.662429	0.516577
$R^2 = 0.25163$[4]			
Adjusted $R^2 = 0.03218$			
Mean PERCENT for nonsupplier firms = 76.54%[3]			

[1] CAR_i is the 3-day cumulative abnormal return for firm around Event 2.

[2] PERCENT is the percentage of revenues that the firm received from retail gambling as reported in the annual report for year-end 2010. This information would have been available to all investors valuing the firms at the time of the event in 2011.

[3] The sample of firms consists of 2 groups, the retail Gambling firms and their suppliers. For the retail firms the average percentage of their revenues that comes from gambling is 76.54%. For the supplier firms 0% of the revenues is from retail gambling. Therefore, this equation implies that the retail gambling firms had an average CAR of 4.04% associated with event 1 and the supplier firms had a −0.18% (approximately 0%) CAR associated with Event 1.

[4] The R^2 (i.e., the percent of variability in the CARs that is explained by the variability in PERCENT), is low. The low R^2 may be due to two factors. One, the study has a relatively small sample size making it more difficult to obtain high R^2s. Two, due to the comingling of food, beverage and hotel activities within the brick-and-mortar firms the reported percentage of revenues associated with gaming, PERCENT, may not be precise. Hence, explanatory power may be limited.

Internet marketplace. For Event 4, the percentage of revenues variable is insignificant ($p = 0.56$). This result is consistent with the view that by 2011 BMS firms were poised to enter the Internet market and capture some of the revenues in a growth area. In this situation, firms with a greater percentage of their revenues from retail gaming are not necessarily in a better position to compete in the Internet marketplace.

SUMMARY AND CONCLUSIONS

On October 13, 2006, President Bush signed the Unlawful Internet Gambling Enforcement Act (UIGEA) of 2006 as an attachment to the Security and Accountability for Every Port Act of 2006. This was the first action that provided federal regulation specific to the online gambling industry. In this article we examined the impact of UIGEA and its subsequent interpretation (through administrative rulemaking and Department of Justice actions), on the value of U.S. publicly traded firms in the gambling industry. From this study we are able to draw three conclusions. The first and most important result of our study is that the UIGEA increased firm values in the gambling industry by 2.86%, or more than 1.6 billion dollars.[4] This result is statistically significant, with a *p*-value of .04. One implication is that BMS firm managers might not wish to

[4]Based on available end 2005, beginning 2006 market values of firms as reported by COMPUSTAT.

support limitless, unregulated, Internet gaming. That is, regulation of the Internet is clearly good for existing firms. By itself this result might seem to reinforce the view of Sheldon Adelson, dubbed the Casino King, that Internet gaming should be totally banned for the benefit of the gaming industry and society (Kuznetz, 2014). Consistent with this, a second result of our work is that controlled online gaming is likely to benefit the existing BMS firms more than an outright ban on online gaming would. This conclusion comes from our analysis of the Justice Department's December 23, 2011, ruling that not all of online gambling is illegal. In response to this ruling, market values of gaming firms rose by 3.55%, or more than 2.4 billion dollars.[5] This result is also significant, with a *p*-value of .0079. This result implies that most of the gaming industry should not be opposed to the legalization of regulated online gaming. Thus, our findings are consistent with the long-held view of the American Gaming Association that controlled online gaming is what is best for the industry. Our third major result in the study is that firms with a greater percentage of their revenue from retail gambling gained more from UIGEA. Knowledge of the differential impact of the regulation on various subsectors of the gaming industry helps managers to devise more targeted, and hence, more effective and efficient corporate strategies.

From the analysis presented in this article, we conclude that allowing regulated, controlled, growth of Internet gambling is likely to provide significant value to the U.S. gambling industry. This positive effect is likely to occur for several reasons. One, it will likely create barriers to entry into the online market and increase revenues for firms in the industry. Two, it is likely to reduce the risk of BMS firms that choose to enter the Internet gaming market by creating rules and procedures that keep underage and problem gamblers away from online gaming. Finally, BMS may find positive benefits in terms of marketing and sales that occur when they are able to produce an online product that is related to existing brick-and-mortar activities.

Internet gaming activity worldwide can be expected to continue to grow and change in the future. It is unclear to most gaming companies—brick-and-mortar and Internet companies—what Internet gaming will be and won't be legal in the United States in the future. Thus, U.S. regulation is a significant source of industry risk. This risk, in turn, increases the riskiness of investment decisions. Through time, if U.S. legislation and government rulemaking more clearly defines "legal gaming," the benefits and risks associated with investment in all areas of the gaming industry will be altered. We suggest that two areas of future research could yield a greater understanding of Internet gaming regulation and the relationship between Internet gaming and value of BMS firms: (a) as regulatory changes happen in the future, event study methodology can be used to assess changes in market expectations associated with new rulemaking and legislation; (b) if the definition of "legal" versus "illegal" Internet gaming is clarified by U.S. regulators, it will be useful to do an ex-post analysis of BMS firm investment patterns and investment rates of return. This will allow us to quantify the actualized (versus expected) impact of Internet gaming regulation on the industry.

[5]Based on available end 2010, beginning 2011 market values of firms as reported by COMPUSTAT.

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