

## Disaggregating the Corporate Headquarters: Investor Reactions to Inversion Announcements by US Firms

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**ABSTRACT** Internationally disaggregated headquarters arise from cross-border relocations of headquarters components. To shed more light on the business consequences of such component relocations, we analyse stock market reactions to inversion initiatives, which are plans by US firms to offshore their registered seat. Combining business economics and institutional theory, we develop an explanatory framework centred on repatriation taxes on foreign income. Since inversions enable US firms to free themselves from such taxes in the US, we hypothesize that inversions by firms that face higher US tax costs in repatriating income will be received more positively by investors, and especially so if the inversion's destination country has no repatriation tax. Yet by freeing themselves from US repatriation taxes, inverting firms deprive the US government of tax revenues and will therefore likely lose legitimacy among US officials. The risks associated with losing such legitimacy, we argue, are higher for firms that are more dependent on the US government, causing the relationship between the US tax costs of repatriating income and investor reactions to inversions to be less positive for such firms. We find substantial support for our framework in an event study of up to 117 inversions announced over the period 1990–2016. Our findings argue for a nuanced, contingency view of the business consequences of inverting and suggest that legitimacy losses are not always as hazardous as previously thought.

**Keywords:** business economics, government dependence, HQ disaggregation, institutional theory, inversions, investor reactions, repatriation taxes

### INTRODUCTION

Relocations of headquarters (HQs) are important strategic events that have gained prominence over the past decades (Birkinshaw et al., 2006; Laamanen et al., 2012). A substantial body of research has analysed HQ relocations within the United States (US), exploring their determinants and spatial patterns, as well as their impact on relocating

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firms' stock prices and operating performance (for reviews, see Gregory et al., 2005; Laamanen et al., 2012). Over time scholars became increasingly interested in HQ relocations to foreign nations, resulting in several studies of the determinants of such relocations (Baaij et al., 2004, 2015; Benito et al., 2011; Birkinshaw et al., 2006; Forsgren et al., 1995; Laamanen et al., 2012; Voget, 2011).

Much of the research on domestic and cross-border HQ relocations has focused on management centres, i.e., corporate offices housing the executive management and corporate-level support functions of a firm (Baaij and Slangen, 2013; Collis et al., 2007; Strauss-Kahn and Vives, 2009). Yet besides having one or more corporate offices, every lawful firm also has a registered seat in the form of a place where its highest legal entity is registered (Baaij et al., 2015; Heron and Lewellen, 1998). This entity directly or indirectly owns a firm's other legal entities and provides the firm with a legal personality separate from that of its employees (Birkinshaw et al., 2006; Hannigan, 2015). Like corporate office relocations, registered seat relocations to foreign nations have also become increasingly common throughout the world (Voget, 2011). In the US, such relocations have come to be known as 'tax inversions' because they enable US firms to move their tax residence abroad and originally concerned foreign subsidiaries that were turned into parents (Desai and Hines, 2002; Economist, 2015; Marples and Gravelle, 2016). Notable examples of US firms that have announced an inversion are Tyco International, Herbalife, Burger King, Coca-Cola Enterprises, Medtronic, and Pfizer. Inversions typically result in an internationally disaggregated HQ because even though they are sometimes accompanied by a cross-border relocation of top executives, they are seldom accompanied by a move of the inverting firm's entire corporate office (Desai, 2009; Webber, 2011). Disaggregated HQs thus not only arise from relocations of subsets of HQ personnel (Baaij and Slangen, 2013), but also from registered seat relocations.

Even though HQ disaggregation by means of an inversion has become increasingly popular among US firms, the business consequences of inverting have been underexplored. A good way to gain more insight into these consequences is to analyse stock market reactions to inversion initiatives, since stock market reactions have been found to be reliable indicators of the benefits and risks associated with a given corporate action (Finkelstein and Halebian, 2002; Harris and Shimizu, 2004). Extant studies of how investors react to inversion initiatives are scarce and based on very small samples, thus providing limited empirical insight into the factors shaping investors' assessments of inversion decisions (Cloyd et al., 2003; Desai and Hines, 2002; Seida and Wempe, 2004). In this paper we aim to shed more light on these factors by developing an explanatory framework centred on repatriation taxes on foreign income and testing that framework on the largest possible sample of the full population of inversions announced by listed US firms. In developing our framework, we take an interdisciplinary approach by combining insights from business economics and institutional theory. Specifically, we argue that inversions enable US firms to free themselves from the American rule that foreign income be taxed upon repatriation to the US. Since this rule is more disadvantageous for firms that face higher US tax costs in repatriating income, we hypothesize that inversions initiated by such firms will be received more positively by investors, and especially so if the inversion's destination country does *not* levy a repatriation tax on inflows of foreign income. However, by freeing themselves from US repatriation taxes, inverting

firms deprive the US government of income tax revenues and will therefore likely lose legitimacy among US government officials. The corporate risks associated with losing such legitimacy, we argue, are higher for firms that are more dependent on the US government. For such firms we therefore hypothesize the relationship between the US tax costs of repatriating income and investor reactions to inversion initiatives to be less positive.

We find substantial support for our framework in an event study of up to 117 inversions announced over the period 1990–2016, using a financial economics-based measure of an inverting firm's repatriation tax costs (Foley et al., 2007; Hanlon et al., 2015) and two indicators of the intensity of its US political activities as proxies for its dependence on the US government (for reviews supporting this approach, see Getz, 1997; Hillman et al., 2004; Lux et al., 2011). Specifically, whereas repatriation tax costs by and of themselves show no effect on cumulative abnormal stock returns observed around inversion announcements, these costs do exhibit their expected positive effect among inversions oriented towards countries without a repatriation tax. Repatriation tax costs also show a positive effect on cumulative abnormal stock returns for inverters whose government dependence is low, but a negative effect for inverters whose government dependence is high. These findings argue for a nuanced, contingency view of the corporate consequences of inverting, and suggest that executives may want to weigh the repatriation tax savings enabled by an inversion against its legitimacy-related risks.

Besides extending HQ relocation and disaggregation research by shedding more light on the business consequences of inverting, our study also contributes to institutional theory by pointing to a boundary condition of the widely-held view that a loss of legitimacy poses a threat to a firm's performance and survival (for a review, see Deephouse and Suchman, 2008). Specifically, we find that, in the eyes of investors, a loss of legitimacy among US officials only poses a significant threat if the inverting firm is dependent on the US government. This finding suggests that legitimacy losses are not always as hazardous to firms' performance as previously thought.

## EMPIRICAL BACKGROUND

Over the past 35 years, a considerable number of firms initiated actions to move their registered seat out of the US, actions that have come to be known as 'tax inversions' (Desai and Hines, 2002; Economist, 2015; Marples and Gravelle, 2016). Using various sources specified in the Methodology section, we compiled a unique list of what we think are all US-registered parent firms that had a stock market listing at the time they finalized their inversion plan and were therefore legally required to disclose that plan.<sup>[1]</sup> Table I shows this list up to the end of 2016, along with the main industry of each inverting firm, the announcement year of each of the 141 inversion initiatives, the form chosen to implement each initiative, its execution status, and the destination country.<sup>[2]</sup> In the fiscal year before they made their inversion announcement, the collective workforce of the firms on the list exceeded 1.63 million employees, indicating that inversions are a significant corporate phenomenon.

Inversions enable firms with a US-registered parent to shift their tax residence from the US to another country and thus relinquish their US tax residency. The reason is

Table I. Inversion initiatives by listed US parent firms (sorted by announcement year)

<i>Inverter name</i>	<i>Main industry</i>	<i>Year</i>	<i>Form</i>	<i>Status</i>	<i>Destination country</i>
McDermott International	Heavy Construction other than Building Contractors	1982	Naked	Completed	Panama
Corroon & Black	Insurance Agents, Brokers and Service	1990	Merger	Completed	United Kingdom
Helen of Troy	Electric Housewares and Fans	1993	Naked	Completed	Bermuda
Triton Energy	Crude Petroleum and Natural Gas	1996	Naked	Completed	Cayman Islands
Tyco International	Communications Equipment, not elsewhere classified	1997	Merger	Completed	Bermuda
Fruit of the Loom	Knitting Mills	1998	Naked	Completed	Cayman Islands
PlayStar	Prepackaged Software	1998	Naked	Completed	Antigua
Chrysler	Motor Vehicles and Passenger Car Bodies	1998	Merger	Completed	Germany
Amoco	Petroleum Refining	1998	Merger	Completed	United Kingdom
Gold Reserve	Gold and Silver Ores	1998	Naked	Completed	Canada
Xoma	Biological Products, except Diagnostic Substances	1998	Naked	Completed	Bermuda
Airtouch Communications	Radiotelephone Communications	1999	Merger	Completed	United Kingdom
Transocean	Drilling Oil and Gas Wells	1999	Naked	Completed	Cayman Islands
Everest Re Holdings	Fire, Marine, and Casualty Insurance	1999	Naked	Completed	Bermuda
White Mountain Insurance Group	Fire, Marine, and Casualty Insurance	1999	Naked	Completed	Bermuda
Trenwick Group	Fire, Marine, and Casualty Insurance	1999	Merger	Completed	Bermuda
Arch Capital Group	Fire, Marine, and Casualty Insurance	2000	Naked	Completed	Bermuda
Foster Wheeler	Heavy Construction other than Building Contractors	2000	Naked	Completed	Bermuda
American General Corporation	Life Insurance	2001	Merger	Withdrawn	United Kingdom
Cooper Industries	Electric Lighting and Wiring Equipment	2001	Naked	Completed	Bermuda
Global Marine	Drilling Oil and Gas Wells	2001	Merger	Completed	Cayman Islands
Ingersoll-Rand	General Industrial Machinery and Equipment	2001	Naked	Completed	Bermuda
Veritas DGC	Oil & Gas Field Exploration Services	2001	Merger	Withdrawn	Cayman Islands
Nabors Industries	Drilling Oil and Gas Wells	2002	Naked	Completed	Bermuda
Noble Drilling Corporation	Drilling Oil and Gas Wells	2002	Naked	Completed	Cayman Islands
Stanley Works	Metalworking Machinery and Equipment	2002	Naked	Withdrawn	Bermuda
Weatherford International	Drilling Oil and Gas Wells	2002	Naked	Completed	Bermuda
Herbalife International	Drugs, Drug Proprietaries, and Druggists' Sundries	2002	Naked	Completed	Cayman Islands
Leucadia National Corporation	Meat Packing Plants	2002	Naked	Completed	Bermuda

Table I. *Continued*

<i>Inverter name</i>	<i>Main industry</i>	<i>Year</i>	<i>Form</i>	<i>Status</i>	<i>Destination country</i>
Private Capital Investors	Blank Checks	2002	Merger	Completed	Canada
Stratabase	Computer Programming, Data Processing	2003	Naked	Completed	Canada
ChipPAC	Semiconductors and Related Devices	2004	Merger	Completed	Singapore
China Resources Development	Wholesale - Miscellaneous Nondurable Goods	2004	Naked	Completed	British Virgin Islands
Penn-America Group	Fire, Marine, And Casualty Insurance	2004	Merger	Completed	Cayman Islands
International Shipping Enterprises	Blank Checks	2005	Merger	Completed	Marshall Islands
Delta Systems	Packaging Machinery	2005	Naked	Completed	Canada
Luna Gold	Gold and Silver Ores	2005	Naked	Completed	Canada
Online Processing	Services-Prepackaged Software	2006	Merger	Withdrawn	British Virgin Islands
Chardan North Acquisition Corporation	Blank Checks	2006	Merger	Completed	British Virgin Islands
Lucent	Computer Integrated Systems Design	2006	Merger	Completed	France
Argonaut Group	Fire, Marine, and Casualty Insurance	2007	Merger	Completed	Bermuda
Star Maritime Acquisition Group	Blank Checks	2007	Naked	Completed	Marshall Islands
Western Goldfields	Gold and Silver Ores	2007	Naked	Completed	Canada
Asia Automotive Acquisition Corp.	Blank Checks	2007	Merger	Completed	British Virgin Islands
Ascend Acquisition Corp.	Blank Checks	2007	Merger	Completed	Bermuda
Vantage Energy Services	Blank Checks	2007	Merger	Completed	Cayman Islands
Lincoln Gold	Gold Ores	2007	Naked	Completed	Canada
Energy Infrastructure Acquisition Corp.	Blank Checks	2007	Merger	Completed	Marshall Islands
Patch International	Crude Petroleum and Natural Gas	2008	Naked	Completed	Canada
Inter-American Acquisition Group	Blank Checks	2008	Merger	Completed	British Virgin Islands
Alyst Acquisition Corp.	Blank Checks	2008	Merger	Completed	British Virgin Islands
Middle Kingdom Alliance Corp.	Blank Checks	2008	Merger	Completed	Cayman Islands
Pantheon China Acquisition Corp.	Blank Checks	2008	Merger	Completed	Cayman Islands
Hungarian Telephone & Cable	Communication Services, not elsewhere classified	2008	Naked	Completed	Denmark
Alpha Security Group	Blank Checks	2009	Merger	Withdrawn	Bermuda
Ideation Acquisition Corp.	Blank Checks	2009	Merger	Completed	Cayman Islands
2020 ChinaCap Acquirco	Blank Checks	2009	Merger	Completed	British Virgin Islands
Tim Hortons	Eating Places	2009	Naked	Completed	Canada
Man Sang Holdings	Wholesale-Jewelry, Watches, Precious Stones & Metals	2009	Naked	Completed	British Virgin Islands

Table I. *Continued*

<i>Inverter name</i>	<i>Main industry</i>	<i>Year</i>	<i>Form</i>	<i>Status</i>	<i>Destination country</i>
China Holdings Acquisition Corp.	Blank Checks	2009	Merger	Completed	British Virgin Islands
Enco International	Drilling Oil and Gas Wells	2009	Naked	Completed	United Kingdom
Catch the Wind	Turbines and Turbine Generator Sets	2010	Naked	Completed	Cayman Islands
Valcant Pharmaceuticals	Pharmaceutical Preparations	2010	Merger	Completed	Canada
Plastinum Polymer Technology Corp.	Plastics Products, not elsewhere classified	2010	Naked	Completed	Netherlands
Frontier Mining	Gold Ores	2010	Naked	Completed	Cayman Islands
UTStarcom	Radio & Tv Broadcasting & Communications Equipment	2011	Naked	Completed	Cayman Islands
China Logistics	Services - Management Consulting Services	2011	Naked	Completed	British Virgin Islands
NYSE Euronext	Security & Commodity Brokers, Dealers, Exchanges & Services	2011	Merger	Withdrawn	Netherlands
Cogo Group	Electronic Components and Accessories	2011	Naked	Completed	Cayman Islands
Alkermes	Pharmaceutical Preparations	2011	Merger	Completed	Ireland
Transatlantic Holdings	Fire, Marine, and Casualty Insurance	2011	Merger	Withdrawn	Switzerland
Argentex Mining Corporation	Mining and Quarrying of Nonmetallic Minerals, except Fuels	2011	Naked	Completed	Canada
Frontiera Resources	Crude Petroleum and Natural Gas	2011	Naked	Completed	Cayman Islands
Greenfields Petroleum Corporation	Crude Petroleum and Natural Gas	2011	Naked	Completed	Cayman Islands
Jazz Pharmaceuticals	Pharmaceutical Preparations	2011	Merger	Completed	Ireland
Tronox	Industrial Inorganic Chemicals	2011	Merger	Completed	Australia
Aon	Insurance Agents, Brokers and Service	2012	Naked	Completed	United Kingdom
Biocancell Therapeutics	Biological Products, Except Diagnostic Substances	2012	Naked	Completed	Israel
Rowan	Drilling Oil and Gas Wells	2012	Naked	Completed	United Kingdom
Stratays	Computer Peripheral Equipment, not elsewhere classified	2012	Merger	Completed	Israel
Eaton	Electrical Industrial Apparatus	2012	Merger	Completed	Ireland
Phorm	Advertising	2012	Naked	Completed	Singapore
China Information Technology	Services - Computer Integrated Systems Design	2012	Naked	Completed	British Virgin Islands
Tamm Oil and Gas	Crude Petroleum And Natural Gas	2012	Naked	Withdrawn	Canada
Tower Group	Fire, Marine, and Casualty Insurance	2012	Merger	Completed	Bermuda
Xtra-Gold Resources Corp.	Gold and Silver Ores	2012	Naked	Completed	British Virgin Islands
Goldenway	Commodity Contracts Brokers & Dealers	2012	Naked	Completed	Hong Kong

Table I. *Continued*

<i>Inverter name</i>	<i>Main industry</i>	<i>Year</i>	<i>Form</i>	<i>Status</i>	<i>Destination country</i>
AlphaRX	Prepackaged Software	2013	Naked	Completed	British Virgin Islands
Liberty Global	Cable and Other Pay Television Services	2013	Merger	Completed	United Kingdom
Feihe International	Dairy Products	2013	Naked	Completed	Cayman Islands
Canyon Copper	Metal Mining	2013	Naked	Completed	Canada
Actavis	Pharmaceutical Preparations	2013	Merger	Completed	Ireland
Hall Tees	Commercial Art and Graphic Design	2013	Naked	Completed	British Virgin Islands
Onnitcom Group	Advertising Agencies	2013	Merger	Withdrawn	Netherlands
Perrigo	Pharmaceutical Preparations	2013	Merger	Completed	Ireland
Yongye International	Agricultural Chemicals	2013	Naked	Withdrawn	British Virgin Islands
Applied Materials	Special Industry Machinery, not elsewhere classified	2013	Merger	Withdrawn	Netherlands
Endo Health Solutions	Pharmaceutical Preparations	2013	Merger	Completed	Ireland
Sunshine Biopharma	Management Consulting Services	2013	Naked	Withdrawn	Canada
Kraton Performance Polymers	Plastics Materials, Synthetic Resins, and Nonvulcanizable Elastomers	2014	Merger	Completed	United Kingdom
Alexion Pharmaceuticals	Biological Products, Except Diagnostic Substances	2014	Merger	Completed	Ireland
Cambridge Capital Acquisition Corporation	Blank Checks	2014	Merger	Withdrawn	Marshall Islands
Chiquita Brands International	Agricultural Production - Crops	2014	Merger	Withdrawn	Ireland
Horizon Pharmaceuticals	Biological Products, Except Diagnostic Substances	2014	Merger	Completed	Ireland
Walgreen	Drug Stores and Proprietary Stores	2014	Merger	Withdrawn	Switzerland
Pfizer	Pharmaceutical Preparations	2014	Merger	Withdrawn	United Kingdom
Quartet Merger Corp.	Blank Checks	2014	Merger	Completed	Bermuda
Medtronic	Electromedical And Electrotherapeutic Apparatus	2014	Merger	Completed	Ireland
C&J Energy Services	Oil and Gas Field Services, not elsewhere classified	2014	Merger	Completed	Bermuda
Auxilium Pharmaceuticals	Pharmaceutical Preparations	2014	Merger	Withdrawn	Canada
Salix Pharmaceuticals	Pharmaceutical Preparations	2014	Merger	Withdrawn	Ireland
Mylan	Pharmaceutical Preparations	2014	Merger	Completed	Netherlands
AbbVie	Pharmaceutical Preparations	2014	Merger	Withdrawn	United Kingdom
Burger King Worldwide	Eating Places	2014	Merger	Completed	Canada
Akorn	Pharmaceutical Preparations	2014	Merger	Withdrawn	Belgium
Civeo Corp.	Hotels, Rooming Houses, Camps, and other Lodging Places	2014	Naked	Completed	Canada

Table I. *Continued*

<i>Inverter name</i>	<i>Main industry</i>	<i>Year</i>	<i>Form</i>	<i>Status</i>	<i>Destination country</i>
Steris Corp.	Orthopedic, Prosthetic, and Surgical Appliances and Supplies	2014	Merger	Completed	United Kingdom
Wright Medical Group	Orthopedic, Prosthetic, and Surgical Appliances and Supplies	2014	Merger	Completed	Netherlands
Globe Specialty Metals	Primary Smelting & Refining of Nonferrous Metals	2015	Merger	Completed	United Kingdom
Cyberonics	Electromedical & Electrotherapeutic Apparatus	2015	Merger	Completed	United Kingdom
Arris Group	Radio & Tv Broadcasting & Communications Equipment	2015	Merger	Completed	United Kingdom
Sino Mercury Acquisition Corporation	Blank Checks	2015	Merger	Completed	British Virgin Islands
Solar Power	Electrical Industrial Apparatus	2015	Naked	Completed	Cayman Islands
Pozen	Pharmaceutical Preparations	2015	Merger	Withdrawn	Ireland
Towers Watson	Services-Management Consulting Services	2015	Merger	Completed	Ireland
CF Industries	Agriculture Chemicals	2015	Merger	Withdrawn	United Kingdom
Coca-Cola Enterprises	Bottled & Canned Soft Drinks Carbonated Waters	2015	Merger	Completed	United Kingdom
Terex	Construction, Mining & Materials Handling Machinery & Equipment	2015	Merger	Withdrawn	Finland
Marathon Patent Group	Patent Owners & Lessors	2015	Merger	Withdrawn	Luxembourg
Cambridge Capital Acquisition Corporation	Blank Checks	2015	Merger	Completed	Cayman Islands
TAL International Group	Services-Equipment Rental & Leasing	2015	Merger	Completed	Bermuda
Pfizer	Pharmaceutical Preparations	2015	Merger	Withdrawn	Ireland
Waste Connections	Refuse Systems	2016	Merger	Completed	Canada
Johnson Controls	Public Building and Related Furniture	2016	Merger	Completed	Ireland
Integrated Inpatient Solutions	Business Services, not elsewhere classified	2016	Naked	Completed	Marshall Islands
IHS	Computer Programming, Data Processing	2016	Merger	Completed	United Kingdom
Acucela	Pharmaceutical Preparations	2016	Naked	Completed	Japan
Cardtronics	Business Services, not elsewhere classified	2016	Naked	Completed	United Kingdom
FMC Technologies	Oil and Gas Field Machinery and Equipment	2016	Merger	Completed	United Kingdom
Janus Capital Group	Investment Advice	2016	Merger	Completed	United Kingdom
Praxair	Industrial Inorganic Chemicals	2016	Merger	Pending	Not specified



that US corporate tax law is based on a 'place of incorporation doctrine', which implies that a firm is only a US tax resident when its highest legal entity (i.e., its parent) is registered in the US. Hence firms with a US-registered parent can move their tax residence abroad by reorganizing their structure such that a legal entity registered in a foreign country becomes the corporate parent. As long as the foreign country's tax laws are not based exclusively on a 'real seat doctrine' – the other main doctrine for determining a firm's tax residence – the shift in tax residence can be accomplished without the firm having the majority of its assets or employees in the foreign country or shifting its place of central management and control there (Kun, 2004; Webber, 2011). Inverting firms have typically incorporated their new parent in countries with a more favourable corporate tax regime than the US one, suggesting that inversions are triggered to a large degree by the US corporate tax system (Webber, 2011), which thus serves as a 'push factor' for outward shifts in tax residence (Laamanen et al., 2012).

Many of the early inversions were so-called 'naked inversions' into Caribbean tax havens. In a naked inversion a US-incorporated parent switches status with one of its foreign-incorporated subsidiaries, and the former parent's stockholders become the owners of the new parent (Marples and Gravelle, 2016; Webber, 2011). Naked inversions in general, and those into tax havens in particular, were strongly restricted by the introduction of US legislation in 2004 stating that, unless an inverted firm performs substantial business activities in its new domicile, it remains a US tax resident whenever 80 per cent or more of the new parent's stock is owned by the former parent's stockholders (Marples and Gravelle, 2016; Webber, 2011). Rather than curbing inversions, this legislation increased the popularity of inversions in the form of cross-border mergers, since the ownership share of the former US parent's stockholders in the new parent could be kept below 80 per cent (yet above 50 per cent) through such inversions.<sup>[3]</sup> As with naked inversions, the new parent is registered outside the US, typically in the country of incorporation of the merger partner (Marples and Gravelle, 2016).

## **THEORY AND HYPOTHESES**

### **How an Inverter's Repatriation Tax Costs Shape Investor Reactions**

US tax law prescribes that US-registered parents are to be taxed not only on their US income, but also on their foreign income when such income is repatriated to the US (Ault and Arnold, 2013; Webber, 2011). By inverting and thereby relinquishing its US tax residency, a firm frees itself from the obligation to pay US repatriation taxes on its foreign (i.e., non-US) income, since such income effectively becomes the income of the newly-formed foreign parent (Desai and Hines, 2002).<sup>[4]</sup> But how favourable is it for firms to flee US repatriation taxes through an inversion? Below we argue that the favourability of fleeing such taxes through an inversion will likely depend on several factors, and that these factors will therefore likely determine how stock markets react to inversion announcements.

The favourability of fleeing US repatriation taxes through an inversion may first of all depend on the financial burden that such taxes pose to an inverting firm and, thus, on the relative magnitude of the economic savings it can realize by inverting. Determining

the burden that US repatriation taxes pose to an inverting firm requires insight into how such taxes are calculated. When a US-registered parent firm repatriates foreign income, that income is taxed in the US at the difference between (i) the average rate at which the income was already taxed in its source countries and (ii) the combined rate of US federal and state income taxes, whose average value has been around 39 per cent since the late 1980s (Foley et al., 2007; OECD, 2016). Thus, if a given US parent faces a US tax rate of 39 per cent and its foreign subsidiaries collectively pay \$20 million in host-country income taxes on their collective pre-tax income of \$100 million, the US parent incurs a US surtax of \$19 million when it repatriates that income. The US surtax not only applies to income that is repatriated immediately upon realization but also to income that is repatriated later, after having been held by foreign subsidiaries in the form of cash. In the latter case, the surtax is deferred up to the moment that the earnings are repatriated (Foley et al., 2007).<sup>[5]</sup> The surtax does not apply if the repatriated income has been taxed abroad at a higher rate than the US rate (Desai and Hines, 2002; Foley et al., 2007).

The above makes clear that the US tax bill associated with repatriating income varies across firms, depending on (1) the combined rate of US federal and state taxes applying to a firm, (2) the firm's foreign income, and (3) the foreign taxes payable on such income (Desai and Hines, 2002; Foley et al., 2007; Hanlon et al., 2015). Specifically, the higher (1) and (2) and the lower (3), the higher the amount of US repatriation taxes that a US-registered parent firm faces on its foreign income. The higher these taxes relative to a firm's size, the greater the burden they pose to the firm and, hence, the higher the so-called repatriation tax costs that the firm faces (Foley et al., 2007; Hanlon et al., 2015). All else equal, the higher these costs for a given inverting firm, the relatively more the firm can save on repatriation taxes by relinquishing its US tax residency and, hence, the relatively more it can increase its net income by inverting. Consequently:

*Hypothesis 1:* The higher the tax costs that an inverting firm faces in repatriating income to the US, the more positively the stock market will react to an inversion announcement.

### **The Moderating Effect of a Destination Country's Income Taxation System**

Although inversions offer the opportunity to save on repatriation taxes, this economic opportunity cannot be realized to the same degree in all destination countries, owing to inter-country differences in the tax treatment of foreign income. Whereas some countries have traditionally exempted foreign income from taxation, others once used or still use the US approach of levying a repatriation tax on inflows of such income (Ault and Arnold, 2013; PWC, 2013; Voget, 2011). Although most inversion initiatives have been oriented towards countries without a repatriation tax, some have been oriented towards countries with such a tax. The latter initiatives can be explained by the fact that some countries with a repatriation tax, such as Ireland, apply a substantially lower rate to inflows of foreign income than the US does (Webber, 2011). Moreover, since merger-

based inversions are usually also driven by other considerations than tax savings (Marples and Gravelle, 2016), the optimal partner for a merger-based inversion may happen to reside in a destination country with a repatriation tax.

All else equal, a US firm facing a given level of US tax costs in repatriating income will reduce its repatriation tax costs more by inverting into a country where it no longer faces a repatriation tax than by inverting into a country where it still faces such a tax. For destination countries without a repatriation tax the hypothesized positive relationship between the US tax costs of repatriating income and investor reactions to inversion announcements will therefore likely be stronger. Put differently:

*Hypothesis 2:* The relationship between an inverter's US tax costs of repatriating income and the stock market's reaction to an inversion announcement is more positive for destination countries without a repatriation tax than for those with such a tax.

### **The Moderating Effect of an Inverter's Government Dependence**

Regardless of their choice of destination country, firms that flee US repatriation taxes through an inversion deprive the US government of income tax revenue (Sheppard, 2002; Webber, 2011). The subset of inversions completed after October 2014, for instance, is expected to yield a \$20 billion income tax loss over a 10-year period (Wall Street Journal, 2014). Below we use institutional theory to argue that inverting firms will therefore likely incur a loss of legitimacy among US officials. We then make the case that this legitimacy loss poses a greater economic risk for firms that are more dependent on the US government.

According to institutional theorists, an organization will be considered legitimate by its stakeholders if it conforms to their behavioural expectations (Deephouse and Carter, 2005; DiMaggio and Powell, 1983; Suchman, 1995). By depriving the US government of tax revenue, inverting firms will likely start to violate several of such expectations held by US government officials. First, they will likely start to violate officials' moral expectations about socially appropriate behaviour (Johnson and Holub, 2003a,b). In general, non-market actors believe that firms should not only act in their own interest but also in the interest of broader societal welfare (Baron, 1995; Lamin and Zaheer, 2012). Government officials will therefore likely expect firms to abstain from acts that harm the national interest (Schröder, 2013). Inverting firms act against that interest because the tax revenue loss they cause hinders governmental investments in public services and may necessitate increases in personal taxes. Moreover, while they deprive the US government of tax revenue, inverting firms usually continue to benefit from several government-enabled location advantages of the US (Kirsch, 2005), thus allegedly no longer paying a fair level of US taxes for accessing these advantages (Johnson and Holub, 2003a,b). Accordingly, the US treasury secretary described inversions as a form of 'abuse of our tax system' because '[t]he firms involved in these transactions still expect to benefit from their business location in the United States, with our protection of intellectual property rights, our support of research and development, our investment

climate, and our infrastructure, all funded by various levels of government' (Lew, 2014). President Obama (2014) even called inversions 'unpatriotic'.

Second, inverting firms will likely also start to violate US officials' pragmatic expectations (Johnson and Holub, 2003a), in that they act against the self-interest of ruling politicians and their partisans (Bitektine, 2011; Suchman, 1995). Since inversions reduce the corporate tax revenue that federal and state-level politicians have at their disposal for investment and may even force them to raise personal taxes, inversions expose such politicians and their fellow party members to a higher risk of losing public support. Inversions thus decrease the chance that ruling politicians will be re-elected or succeeded by one of their partisans.

Since inverting firms will likely start to violate the moral and pragmatic expectations of US officials, they will likely incur a loss of legitimacy among these officials. Institutional theorists have argued that a loss of legitimacy poses a threat to a firm's performance and survival (for a review, see Deephouse and Suchman, 2008) because such a loss may cause a firm's legitimators to curtail its 'license to operate' (Heugens and Lander, 2009, p. 63) by withdrawing their passive or active support to the firm (Baum and Oliver, 1991; Choi and Shepherd, 2005; Suchman, 1995). Yet we contend that a loss of legitimacy is unlikely to be equally threatening to all firms, because not all firms are equally vulnerable to restrictions of their social license to operate. Specifically, we propose that the threat that an inverter faces upon losing legitimacy among US officials hinges on its dependence on the US government. This dependence refers to the degree to which a firm's activities and strategies can be impeded by US officials (Murtha and Lenway, 1994; Shaffer, 1995), and may take several forms, each of which may enable such officials to curtail a firm's license to operate and thereby inflict damage on the firm.

For example, a firm supplying US public bodies may not be awarded new contracts once it inverts, based on officials' claims that its products are not vital to the national interest and can therefore safely be sourced from other firms (Webber, 2011; Voget, 2011). Similarly, a firm that needs permits from US federal or state agencies may start to face growth constraints once it announces an inversion, because its applications for new products or projects may be subjected to greater scrutiny. A firm may also offer products of great social importance, and this importance may be exploited by officials to justify an inquiry into the firm after it has announced or completed its inversion. For instance, after inverting into Canada in 2010, Valeant Pharmaceuticals at some point became the subject of a US government investigation into its drug pricing practices, even though there was 'no indication of fraudulent or illegal practice' (Economist, 2016, p. 58). Partly due to this investigation, the firm lost most of its stock market value in 2016 (Economist, 2016).

An inverting firm's loss of legitimacy among US officials may cause such officials to curtail the firm's license to operate for two reasons. First, they may want to keep the firm from completing its inversion initiative and, hence, the tax revenue loss at stake from materializing. After it has been announced, an inversion has to be approved by the inverting firm's shareholders during a special meeting and subsequently implemented by means of an elaborate administrative process (Kun, 2004). As a result, it usually takes at least several months before an announced inversion has been executed (Wells, 2012). During this time period, government-induced restrictions of an inverter's license to

operate may inflict damage on the firm and may thus keep it from completing its inversion initiative. Pfizer, for instance, abandoned its previously-announced inversion merger with Ireland-based Allergan after the US Treasury issued stricter anti-inversion rules that were in part ‘surgically targeted against Allergan’ and that eliminated the envisioned tax savings and necessitated Pfizer to pay a substantial breakup fee (Financial Times, 2016). Second, US officials may want to keep other US-registered firms from inverting by signalling to these firms that inverting may have negative consequences for them. Once a firm inverts, especially its US-registered competitors may be inclined to invert as well, so as to avoid a competitive disadvantage (Sheppard, 2002).

The higher an inverter’s dependence on the US government, the greater its vulnerability to governmental restrictions of its license to operate and, hence, the more its loss of legitimacy among US officials will pose a threat to its performance. The greater this threat, the less investors will likely value the fact that an inverter with greater repatriation tax costs can save relatively more on repatriation taxes. Therefore:

*Hypothesis 3:* The relationship between an inverter’s US tax costs of repatriating income and the stock market’s reaction to an inversion announcement is less positive for inverters that are more dependent on the US government.

## METHODOLOGY

### Data Collection and Sample

To compile our comprehensive list of inversion initiatives announced by listed US parent firms (displayed in Table I), we first collected and merged the lists of initiatives reported in extant academic, governmental, and consultancy studies of inversions (Bloomberg, 2015; CFO Magazine, 2002; Chorvat, 2013; Cloyd et al., 2003; Desai and Hines, 2002; Forbes, 2014; Hicks, 2003; Johnson and Holub, 2003a; Kun, 2004; Seale and Associates, 2014; Seida and Wempe, 2004; US General Accounting Office, 2002; Ways and Means Committee Democrats, 2014; Webber, 2011; Wells, 2014). We then used Dow Jones’ *Factiva* database, Google.com, and the EDGAR search tools of the US Securities and Exchange Commission (SEC) to (i) collect press releases and other publicly-accessible company documents announcing the previously-identified initiatives, and (ii) search for additional inversion initiatives using keywords employed in the announcements of the previously-identified initiatives (such as ‘inversion’, ‘redomicile’, ‘redomestication’, ‘reorganization’, ‘reincorporate’, ‘continuance into’, and ‘new holding’). We excluded inversion initiatives disclosed by unlisted US parents as well as those that did not meet our criteria for an inversion (as previously described in footnote 2).

To establish how the stock market reacted to each inversion announcement, we performed an event study, using the publication date of an inversion announcement as the announcement date. In the few cases where different documents were published on different dates, we used the date of the earliest publication as the announcement date. The required data on the daily stock prices of the inverting firms were obtained from Thomson Reuter’s *Datastream* database. Since this database also contains stock price data for firms that are no longer active, its use prevents the occurrence of survivorship bias.

To measure the repatriation tax costs faced by the inverting firms, we combined data from several sources, notably firms' annual reports as filed with the SEC, Standard & Poor's (S&P's) *Compustat* database, the Tax Foundation's Center for State Tax Policy, and the OECD (2016). To measure an inverting firm's government dependence, data on the firm's size as reported in the first two sources were combined with data on its political activities from the *OpenSecrets.org* database of the Center for Responsible Politics (CRP). The data on destination countries' taxation systems were obtained from PWC (2013), KPMG's *Corporate and Indirect Tax Survey* (various years), and a few national sources.

As reported below, we analysed several samples of the 141 inversion initiatives listed in Table I, with the largest sample comprising 117 observations. These 117 inversions were announced over the period 1990–2016 and were oriented towards 20 destination countries. The main industries of the sample firms were obtained from their SEC filings and the *Compustat* database, and spanned 61 different four-digit SIC codes.

### Dependent Variable

In line with prior event studies (e.g., Hanlon et al., 2015; Schijven and Hitt, 2012), we measure investor reactions to an inversion announcement by the cumulative abnormal return (CAR) on the inverting firm's stock over a five-day period starting two trading days before the announcement and ending two trading days after it, i.e., [-2,2]. Our choice for this period is based on the idea that the information conveyed by inversion announcements is incorporated in share prices relatively quickly and may leak to investors somewhat prematurely (Finkelstein and Haleblan, 2002). Because the exact time-frame within which these information processes occur is theoretically ambiguous, we also tested our hypotheses using CARs over a somewhat shorter and longer time period, i.e., [-1,1] and [-3,3] (Schijven and Hitt, 2012). Since these analyses yielded qualitatively similar results, we only show the results for the five-day event window.

The CAR equals the sum of the daily abnormal returns (ARs) within the event window. The daily AR, in turn, is equal to the difference between (i) the actual return on the inverting firm's stock on day  $t$  of the event window and (ii) the return that would be expected for that day on the basis of the market model. As in prior studies (e.g., Finkelstein and Haleblan, 2002; Harris and Shimizu, 2004), the expected return was calculated as follows:

$$E(R_{i,t}) = a_i + b_i \cdot R_{m,t} \quad (1)$$

with  $R_{m,t}$  being the return on the market portfolio on day  $t$  and  $a_i$  and  $b_i$  being firm-specific parameters that were estimated over a 250-day period (corresponding to about one year of trading days) starting 271 days before an inversion announcement and ending 21 days (i.e., four trading weeks) before it.<sup>[6]</sup> To estimate  $a_i$  and  $b_i$ , we ran the following regression model:

$$R_{i,t} = \alpha_i + \beta_i \cdot R_{m,t} + \varepsilon_{i,t} \quad (2)$$

where  $R_{i,t}$  is the return on inverter  $i$ 's stock on day  $t$  of the 250-day estimation window,  $R_{m,t}$  the market return on that day, and  $\varepsilon_{i,t}$  an error term. For inverters with multiple



stock market listings, we used the return on their stocks at their main listing, which was a non-US one for 13 inverters. For these firms, the market return is defined as the return on a major composite index of the country where a firm had its main listing. For the large majority of inverters whose only or main listing was a US one, the market return is defined as the return on the S&P500 index.

### Main Independent Variables

To measure the US tax costs that a firm faces in repatriating foreign income, we used the following modified version of an index developed by Foley et al. (2007) and subsequently used by Hanlon et al. (2015):

$$REPAT_i = \frac{(PTFI_i \times [FEDT\% + ST\%]) - FIT_i}{TA_i}$$

where  $PTFI_i$  is a firm's pre-tax foreign income over the last completed fiscal year before its inversion announcement,  $FEDT\%$  the US federal income tax rate after deductions for state income taxes,  $ST\%$  the income tax rate of the US state where the firm was registered,  $FIT_i$  the amount of foreign income taxes payable by the firm in the last completed fiscal year before its inversion announcement, and  $TA_i$  the firm's total assets at the end of that year. Like Foley et al. (2007) and Hanlon et al. (2015), we set the minimum value of  $REPAT_i$  to zero, since US firms do not face a repatriation tax if their foreign income tax bill (i.e.,  $FIT_i$ ) exceeds the amount of taxes they would need to pay if their foreign income would be taxed at the US rate (i.e.,  $PTFI_i \times [FEDT\% + ST\%]$ ). For the few US states without a corporate income tax, we used the basic federal income tax rate of 35 per cent, i.e., the rate without deductions for state income taxes. Foley et al.'s original index applies that basic rate to all firms, thus failing to take into account state income taxes. Two inverters were excluded from our sample because they were registered in a US state with a gross receipts tax rather than a corporate income tax.

Like Foley et al. (2007) and Hanlon et al. (2015), we set missing values of  $PTFI_i$  and  $FIT_i$  to zero, unless the *Compustat* database or an inverter's annual report showed that the firm did have foreign sales in the year concerned. This imputation approach is warranted because SEC regulations require firms to separately report their pre-tax foreign income and foreign income taxes payable if the amounts involved exceed 10 per cent and 5 per cent of their total pre-tax income, respectively (Foley et al., 2007, p. 586).<sup>[7]</sup>

Since our measure of repatriation tax costs is based on data for the year before an inversion announcement, it could be argued to reflect a firm's repatriation tax costs in that year only. However, Foley et al. (2007) found that a firm's repatriation tax costs in a given year show a strong positive relationship with the relative size of a firm's foreign cash holdings.<sup>[8]</sup> This finding suggests that a firm's repatriation tax costs in a given year are also a reasonable proxy for the tax costs of repatriating a firm's total stock of foreign-held earnings, since firms that hold relatively more foreign cash likely faced higher tax costs in repatriating their previous earnings (Hanlon et al., 2015).

To test Hypothesis 2, we interacted an inverter's repatriation tax costs with a binary variable indicating the nature of a destination country's income taxation system in the year prior to an inversion announcement. This variable was coded 1 for destination

countries where foreign income was tax exempt at that time and 0 for countries where such income was subject to a repatriation tax (Voget, 2011).<sup>[9]</sup>

To test Hypothesis 3, we interacted an inverter's repatriation tax costs with two different proxies for its dependence on the US government. To develop these proxies, we relied on data on the intensity of an inverter's US political activities. This approach is grounded in research showing that firms spend relatively more on political activities if their activities and strategies are more vulnerable to government interference (for reviews, see Getz, 1997; Hillman et al., 2004; Lux et al., 2011). Like many other scholars, we focus on those two types of firm-level political activity on which the CRP provides data, i.e. lobbying and employee donations to political action committees (PACs) (for a review, see Lux et al., 2011). These political activities correspond to Hillman and Hitt's (1999) information and financial-incentive strategies, respectively. We measure an inverter's lobbying intensity by its federal-level lobbying expenses to total assets in the year prior to its inversion announcement.<sup>[10]</sup> Likewise, we measure an inverting firm's PAC donation intensity by the sum of its employees' donations to its PAC as a percentage of the firm's total assets in the year of the last quadrennial or midterm federal election prior to its inversion announcement. Both intensities were log transformed to eliminate outliers.<sup>[11]</sup> We abstained from using absolute expenses on political activities because they have been found to be correlated with a firm's size (Lux et al., 2011) and, hence, might have generated a biased moderating effect.

### Control Variables

To control for a direct effect of firm size on CARs, we enter the log of a firm's number of employees in the last completed fiscal year before it made its inversion announcement. The employment data were obtained from the annual reports of the inverting firms and the *Compustat* database. We also enter a dummy variable coded 1 for inversion initiatives that were accompanied by a relocation of some or all of the inverter's top executives to the destination country and 0 for initiatives that were not. Likewise, we control for the implementation form of an inversion initiative by entering a dummy variable coded 1 for mergers and 0 for naked inversions. The data on both dummy variables were obtained from the inversion announcements.

We also control for the corporate tax rate in an inversion's destination country in the year in which the inversion was announced (Laamanen et al., 2012). The data on countries' corporate tax rates were obtained from KPMG's *Corporate and Indirect Tax Survey* (various years) and the OECD (2016). Furthermore, we control for the destination country's legal tradition through a dummy variable coded 1 for countries with a legal system based on common law and 0 for those with a system based on civil law. The data on countries' legal systems were obtained from La Porta et al. (1998) and the CIA's *World Factbook*. Investors may react more favourably to inversions oriented towards common-law countries because shareholder rights are generally better protected in such countries (La Porta et al., 1998). Finally, since Delaware is generally considered to have the most advanced corporate law system of all US states and is therefore the most popular state of incorporation for US businesses (Daines, 2001; Heron and Lewellen, 1998), investors may react differently to inversion announcements by firms registered in Delaware than



to those by firms registered in other US states. We therefore include a dummy variable coded 1 for inverters registered in Delaware and 0 for those registered elsewhere.

### Statistical Method

We estimated our models in STATA 13, using ordinary least squares regression analysis. To eliminate the potentially distorting impact of outliers among our non-dichotomous variables of interest, we winsorized the two lowest and the two highest CARs as well as the two highest values of an inverter's repatriation tax costs and its lobbying and PAC donation intensities. We only winsorized the highest values of the latter three variables because their lowest possible value of zero was not uncommon in our sample. We clustered observations based on the four-digit SIC code of an inverter's main industry to obtain standard errors that are robust to intra-industry dependence of observations.

## RESULTS

Table II shows the descriptive statistics of our variables and their correlations. The mean CAR over the five-day event window is 3.0 per cent and significantly different from zero ( $p < 0.01$ ), indicating that on average investors react positively to inversion announcements. Yet there was substantial variation across announcements, as the five-day CARs ranged from  $-56.5$  per cent to 30.3 per cent. The correlations between the CARs within the different event windows range from 0.79 to 0.90, whereas the correlation between an inverter's lobbying intensity and its PAC donation intensity is 0.48, indicating that firms do not always rely on both political activity types to the same degree.

The correlations between those independent variables that were entered in the same regression models were all lower than 0.6, suggesting that our regression results reported in Table III do not suffer from multicollinearity. This conjecture was confirmed by our finding that the variance inflation factors (VIFs) of all variables were below the generally accepted threshold of 10 (Hair et al., 2006), with the highest VIF being 5.28.

Table III displays the regression models that we estimated for both indicators of a firm's government dependence. Models 1a and 1b only contain the moderating and control variables. They show, among others, that inversions oriented towards countries without a repatriation tax yield lower CARs than those oriented towards countries with such a tax. One possible reason is that more than 40 per cent of the former inversions were oriented towards tax havens (notably Bermuda and the Cayman Islands), whose laws 'may provide inadequate guidance for shareholders to monitor directors' compliance with their duties and may lack satisfactory means of enforcement' (Kun, 2004, p. 364). The intensity of firms' political activities does not show a clear-cut direct effect on CARs around inversion announcement dates. Whereas an inverter's PAC donation intensity exhibits a positive direct effect (Model 1b), its lobbying intensity does not (Model 1a). These findings suggest that investors see no clear benefits in relatively intense lobbying prior to an inversion announcement, whereas they do see benefits in relatively large employee donations to PACs. The Delaware dummy, on the other hand, has a significantly positive effect on CARs in both sets of models, indicating that investors on average react more positively to proposed inversions out of Delaware than

Table II. Descriptive statistics and correlations<sup>a</sup>

	<i>Mean</i>	<i>S.D.</i>	<i>Min</i>	<i>Max</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>
1. CAR [-1,1]	0.032**	0.12	-0.48	0.52												
2. CAR [-2,2]	0.030**	0.12	-0.57	0.30	0.88											
3. CAR [-3,3]	0.031**	0.14	-0.61	0.43	0.79	0.90										
4. Inverter's US tax costs of repatriating income	1.14	2.82	0	19.79	-0.05	-0.01	-0.01									
5. Inverter's lobbying intensity <sup>b</sup>	1.38	2.19	0	9.21	0.15	0.18	0.14	0.03								
6. Inverter's PAC donation intensity <sup>b</sup>	0.63	1.19	0	5.23	0.16	0.20	0.19	0.04	0.48							
7. Inverter's size <sup>b</sup>	1.33	1.44	0	5.52	0.08	0.13	0.14	0.10	0.43	0.52						
8. Inverter was registered in Delaware	0.64	0.48	0	1	0.04	0.10	0.08	0.03	0.10	0.00	-0.06					
9. Destination country has no repatriation tax	0.82	0.39	0	1	-0.19	-0.28	-0.26	-0.12	-0.35	-0.16	-0.26	0.07				
10. Destination country's legal tradition	0.88	0.33	0	1	-0.10	-0.04	-0.05	0.09	-0.08	-0.14	-0.23	0.05	-0.10			
11. Relocation of executives	0.25	0.43	0	1	-0.01	0.06	0.12	0.06	0.27	0.08	0.24	0.02	-0.35	0.09		
12. Merger-based inversion	0.58	0.50	0	1	0.19	0.26	0.23	-0.10	0.30	0.18	0.27	0.30	-0.35	-0.21	0.17	
13. Tax rate in destination country	13.68	13.27	0	56.05	0.10	0.11	0.14	0.11	0.21	0.13	0.22	-0.05	-0.20	-0.41	0.36	0.19

<sup>a</sup>N = 117, except for the statistics relating to an inverter's lobbying intensity, which are based on N = 113. All statistics are based on the non-winsorized variables. Correlations greater than or equal to |0.19| are significant at the 5 per cent level, while those greater than or equal to |0.25| are significant at the 1 per cent level.  
<sup>b</sup>Log-transformed.  
 \*\*CAR > 0 at p < 0.01.

Table III. OLS regressions of the determinants of CARs around inversion announcement dates<sup>a</sup>

Variable	Government dependence measured by lobbying intensity					Government dependence measured by PAC donation intensity				
	Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
<b>Inverter's US tax costs of repatriating income (H1)</b>										
<b>Inverter's US tax costs of repatriating income *</b>	-0.004 (0.004)	-0.019*** (0.005)	0.006 (0.007)	-0.012† (0.006)	-0.016** (0.006)	0.003 (0.006)	-0.016** (0.006)	0.003 (0.006)	-0.010† (0.005)	0.017* (0.007)
<b>Destination country has no repatriation tax (H2)</b>										
<b>Inverter's US tax costs of repatriating income *</b>										
<b>Inverter's government dependence<sup>b</sup> (H3)</b>										
Destination country has no repatriation tax	-0.078** (0.027)	-0.078** (0.030)	-0.110** (0.034)	-0.065* (0.032)	-0.104** (0.039)	-0.066** (0.026)	-0.066* (0.028)	-0.091** (0.031)	-0.060* (0.028)	-0.086** (0.034)
Inverter's government dependence <sup>b</sup>	0.002 (0.006)	0.002 (0.006)	0.000 (0.007)	0.008 (0.007)	0.007 (0.007)	0.015* (0.008)	0.015* (0.008)	0.014* (0.008)	0.028*** (0.007)	0.028*** (0.008)
Inverter's size <sup>b</sup>	-0.002 (0.008)	0.000 (0.008)	0.000 (0.007)	0.002 (0.007)	0.002 (0.007)	-0.004 (0.010)	-0.003 (0.010)	-0.003 (0.010)	-0.002 (0.009)	-0.002 (0.009)
Relocation of executives	-0.016 (0.037)	-0.016 (0.036)	-0.021 (0.037)	-0.017 (0.032)	-0.023 (0.033)	-0.017 (0.040)	-0.017 (0.039)	-0.021 (0.040)	-0.021 (0.036)	-0.027 (0.037)
Merger-based inversion	0.020 (0.024)	0.018 (0.023)	0.013 (0.025)	0.022 (0.021)	0.015 (0.023)	0.029 (0.023)	0.027 (0.022)	0.034† (0.024)	0.034† (0.022)	0.029 (0.024)
Tax rate in destination country	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Destination country's legal tradition	-0.003 (0.035)	0.002 (0.036)	-0.002 (0.037)	0.008 (0.036)	0.003 (0.037)	0.005 (0.036)	0.009 (0.036)	0.005 (0.038)	0.020 (0.035)	0.016 (0.037)
Inverter was registered in Delaware	0.036* (0.019)	0.038* (0.019)	0.041* (0.020)	0.037* (0.019)	0.041* (0.020)	0.026† (0.019)	0.028† (0.019)	0.031† (0.020)	0.029† (0.019)	0.032† (0.020)

Table III. Continued

Variable	Government dependence measured by lobbying intensity					Government dependence measured by PAC donation intensity				
	Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
Constant	0.059 (0.047)	0.055 (0.048)	0.090† (0.054)	0.028 (0.049)	0.068 (0.056)	0.045 (0.048)	0.042 (0.048)	0.068 (0.054)	0.016 (0.048)	0.044 (0.054)
Observations	113	113	113	113	113	117	117	117	117	117
R-squared	0.164	0.168	0.187	0.217	0.246	0.163	0.167	0.180	0.209	0.223
Adjusted R-squared	0.100	0.096	0.107	0.141	0.163	0.101	0.097	0.103	0.134	0.142
F-value of model	2.883**	2.375*	8.849***	8.980***	6.863***	3.336**	2.793**	6.253***	7.653***	7.109***
F-value of additional variable		1.26	7.07*	14.49***	10.69***		1.37	5.97*	15.04***	9.29***

<sup>a</sup>Robust standard errors in parentheses.

<sup>b</sup>Log transformed.

†p < 0.1; \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001 (two-tailed if hypothesized, one-tailed if not).

to those out of other US states. This effect may have two possible causes. First, although Delaware's corporate law system is more advanced than that of other US states, its corporate tax rate of 8.7 per cent is among the highest in the US. Second, inversions out of Delaware are more likely to entail operational synergies, since these inversions are more likely to be merger-based rather than naked ones (see Table II), presumably because Delaware's advanced legal system particularly facilitates mergers and acquisitions (Daines, 2001). The other control variables do not exert significant effects on investor reactions to inversion announcements.

Models 2a and 2b test Hypothesis 1, which predicted that investors react more positively to inversion announcements by firms that face higher tax costs in repatriating income to the US. The hypothesis is not supported, since both models yield an insignificant regression coefficient of an inverter's US tax costs of repatriating income. Apparently, higher such costs are not a sufficient condition for triggering more positive investor reactions to inversion announcements.

Models 3a and 3b test Hypothesis 2, which predicted that the relationship between an inverter's repatriation tax costs and the stock market's valuation of an inversion is more positive for destination countries without a repatriation tax than for those with such a tax. This hypothesis is supported, since both models generate a significantly positive interaction effect of an inverter's repatriation tax costs and the dummy coded 1 for destination countries without a repatriation tax ( $p < 0.05$ ). To gain further insight into this effect, we used the results of Model 3a to create a graph indicating how repatriation tax costs are related to inversion-induced CARs in both subsets of destination countries.<sup>[12]</sup> As depicted in Figure 1, the graph shows a positive relationship between repatriation tax costs and CARs for destination countries without a repatriation tax, presumably because inversions into such countries cause inverters with the highest US repatriation tax costs to realize the relatively greatest savings in repatriation taxes. For the subset of destination countries *with* a repatriation tax, the relationship between repatriation tax costs and CARs is negative, indicating that firms with higher US repatriation tax costs are penalized more for inverting into a country where they still face a repatriation tax. The likely reason is that firms inverting into such a country forgo the opportunity to start avoiding repatriation taxes altogether, leading them to incur higher opportunity costs if their repatriation tax costs are higher.

Models 4a and 4b test Hypothesis 3, which proposed that the relationship between an inverter's repatriation tax costs and the stock market's reaction to an inversion is less positive for inverters that are more dependent on the US government. This hypothesis also receives support, since both models show a negative interaction effect of an inverter's repatriation tax costs and its US government dependence ( $p < 0.001$ ). Figure 2 graphically illustrates this effect by showing how repatriation tax costs are related to CARs for lobbying intensities one standard deviation below and above their sample mean. Consistent with Hypothesis 3, the figure indicates that the relationship between repatriation tax costs and CARs is positive for inverters with a low level of government dependence but negative for inverters with a high level of such dependence.<sup>[13]</sup> The latter finding suggests that, according to investors, the risk of government interference to which government-dependent inverters expose themselves outweighs the prospect of repatriation tax savings.

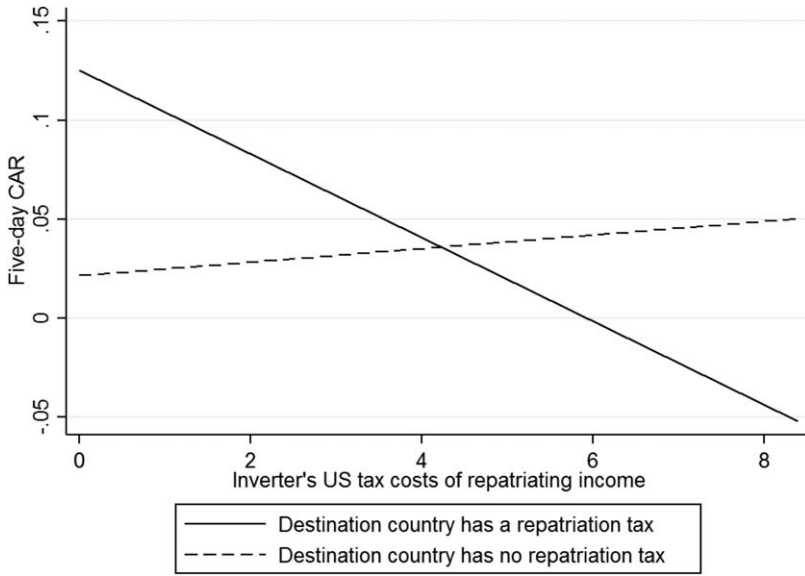


Figure 1. The impact of repatriation tax costs on CARs for destination countries with and without a repatriation tax, respectively

Models 5a and 5b, finally, test Hypotheses 2 and 3 simultaneously and yield highly similar levels of support for both hypotheses as the models where the interaction terms are included separately.

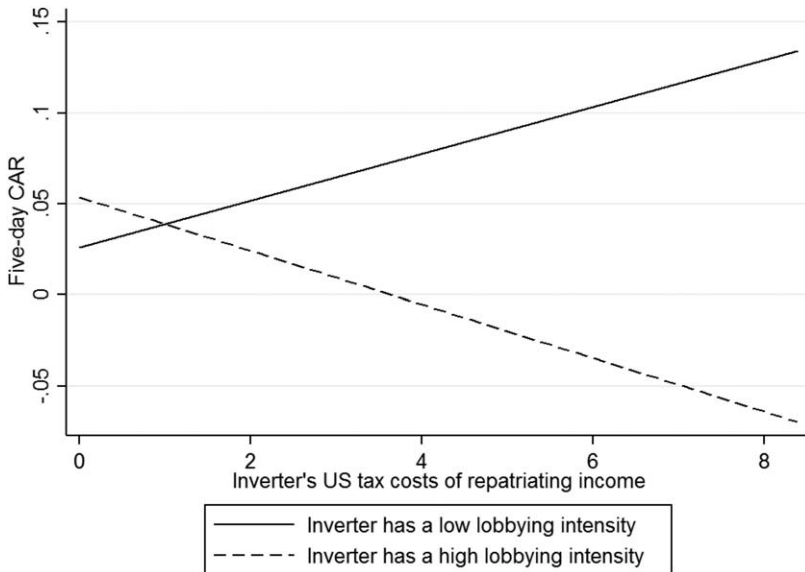


Figure 2. The impact of repatriation tax costs on CARs for inverters with a low and a high lobbying intensity, respectively

## ADDITIONAL ANALYSES

Because the error terms of the above regression models may be correlated with those of a model predicting the likelihood that a US-registered firm initiates an inversion, our above results may contain a selection bias. To assess this possibility, we followed King and Soule's (2007) event study and retested our hypotheses using Heckman's (1979) selection model. For each inverting firm, we selected from the *Compustat* database five US-registered firms that never initiated an inversion, notably those whose total asset value in the last fiscal year before the focal inversion announcement was most similar to that of the inverting firm and whose four-digit SIC code was identical. We then ran binary probit models of the likelihood that a firm initiates an inversion, using five explanatory variables, i.e., a firm's repatriation tax costs, its government dependence (consecutively measured by its lobbying and PAC donation intensity), its size in terms of its number of employees (log transformed), whether it was registered in Delaware or another US state, and its leverage as measured by the ratio of its total liabilities to total assets. Missing data for some non-inverting firms resulted in a sample of 472 observations for the lobbying-based indicator of government dependence and sample of 487 observations for the PAC donation-based indicator. The Heckman probit models provided strong evidence that firms with higher repatriation tax costs are more likely to initiate an inversion and some evidence that highly leveraged firms are less likely to do so. We then added the correction term for selection bias generated by these models to our regression models of the CARs around inversion announcement dates and tested whether the error terms of the two sets of models were significantly correlated. Wald tests generally showed that they were, suggesting that unobserved heterogeneity predicting the occurrence of an inversion initiative co-determines investor reactions to that initiative (see King and Soule, 2007). However, the inclusion of the correction term did not yield substantive changes in the above-reported results for our variables of interest, neither for the five-day event window nor for the other windows, indicating that these results do not suffer from a selection bias.

We also recalculated our dependent variable using Fama and French's (2015) five-factor model, which constitutes a recent extension of their seminal three-factor model (Fama and French, 1993). In the five-factor model, a stock's expected return – and, hence, its CAR – is not only a function of the market return, but also of four other factors that have been shown to explain stock returns. These factors represent share price premiums or discounts stemming from a firm's market capitalization, its book-to-market ratio, its profitability, and its investment intensity. We entered them as additional independent variables in equations (1) and (2) to generate alternative estimates of the expected returns on the inverting firms' stocks, using daily data on the five factors from Kenneth French's data library.<sup>[14]</sup> We then used these alternative expected returns to recalculate the CARs around the inversion announcement dates. Since daily data on the five factors were only available for the US stock market, we could only recalculate the CARs for US-listed inverters, resulting in a sample of 103 observations for the lobbying-based indicator of government dependence and 107 observations for the PAC donation-based indicator. When we reran our regression models using the five factor-based CARs, we obtained results that were qualitatively similar to our initial ones,

although Hypothesis 2 now received only partial support in the PAC-donation-focused sample.

## DISCUSSION AND CONCLUSION

Despite the increased popularity of inversions and their contribution to the international disaggregation of HQs, their consequences for the firms concerned have been underexplored. Our study begins to shed light on these consequences by clarifying the multifaceted role of repatriation taxes in shaping stock market reactions to inversion announcements by US firms. Analysing the largest sample of such announcements to date, we find that high US tax costs of repatriating income are generally not a sufficient condition for generating a positive stock market reaction to an inversion initiative. To generate such a reaction, the inversion also needs to be oriented towards a country that itself does not have a repatriation tax, or be undertaken by a firm that does not substantially depend on the US government. High repatriation tax costs are in fact perceived negatively by investors if an inversion is oriented towards a country with a repatriation tax or initiated by a firm that is highly dependent on the US government. These findings argue for a nuanced, contingency view of the consequences of registered seat relocations for US firms. Moreover, they add to international business research on HQ relocations, since that research so far mainly focused on relocations of HQ personnel and on the determinants of relocation rather than its consequences (Baaij et al., 2004; Benito et al., 2011; Birkinshaw et al., 2006; Laamanen et al., 2012).

Our finding that investor reactions to inversions are determined jointly by an inverter's repatriation tax costs and a destination country's income taxation system shows the importance and potential of including cross-level interactions in studies of cross-border HQ relocations. Earlier studies of such relocations either focused exclusively on the role of firm-level factors (Baaij et al., 2015; Benito et al., 2011; Birkinshaw et al., 2006) or assessed the role of firm and country-level factors independently (Baaij et al., 2004; Laamanen et al., 2012). Furthermore, our finding that the effect of repatriation tax costs on inversion-induced CARs varies with an inverter's government dependence shows the importance of taking into account the intervening power of the home government. That power has hardly been addressed either in prior work on cross-border HQ relocations, even though outbound relocations of HQ components often have negative consequences for domestic welfare and may therefore be deemed illegitimate by the home government (Benito et al., 2011).

The moderating effect of an inverter's government dependence also indicates that, in the eyes of investors, losing legitimacy among US officials is not equally threatening to all firms. In fact, we find that whereas the relationship between repatriation tax costs and CARs is negative for inverters with a high level of government dependence, it is positive for inverters with a low level of such dependence. Investors thus seem to believe that an inversion-induced legitimacy loss hardly poses a threat if an inverter's government dependence is limited. This insight adds to institutional theory by pointing to boundary condition of the widely-held view among institutional theorists that legitimacy losses pose significant threats to firms' performance and, hence, to their survival (for a review, see Deephouse and Suchman, 2008). Our findings suggest that this view only



applies when a firm is substantially dependent on the legitimating actors concerned, since only in that case these actors can inflict serious damage on the firm.

Although the intensity of firms' political activities has been confirmed to be a valid proxy for their government dependence (e.g., Lux et al., 2011), this intensity can also be viewed as reflecting firms' self-constructed legitimacy among government actors. If this alternative view were to hold, politically more active inverters would have less to fear from the fact that they deprive the US government of tax revenue. Accordingly, the intensity of an inverter's political activities would have strengthened rather than mitigated the positive relationship between repatriation tax costs and CARs. Since we consistently obtained a mitigating effect of the intensity of an inverter's political activities, that intensity must primarily have captured an inverter's government dependence rather than its self-constructed legitimacy among government actors. One possible explanation is that political activities are often ineffective (Hadani and Schuler, 2013; Nell et al., 2015), rendering a firm's reliance on them a poor indicator of successful legitimation.

Although prior research indicates that a firm's repatriation tax costs in a given year are also a reasonable proxy for the tax costs of repatriating a firm's total stock of foreign-held earnings (Foley et al., 2007; Hanlon et al., 2015), our single-year measure may not have captured the latter costs sufficiently well. This may explain why we do not find support for Hypothesis 1. However, as mentioned previously, probit regressions of likelihood that a firm initiates an inversion consistently indicated that this likelihood is higher for firms with higher scores on our measure of repatriation tax costs. These results show that our single-year measure does have explanatory power, suggesting that it has sufficient construct validity. Interestingly, further probit regressions indicated that the positive effect of repatriation tax costs on the likelihood of inverting does not diminish with a firm's government dependence. Combined with our finding that such dependence does diminish the effect of repatriation tax costs on cumulative abnormal stock returns, these results suggest that managers and investors assess the case for an inversion in different ways. Possibly blinded by hubris, managers seem to disregard the legitimacy-related risks associated with inverting, thus seemingly assessing the case for an inversion solely on the basis of the scope for repatriation tax savings. Investors, on the other hand, seem to see the legitimacy-related risks associated with an inversion as a serious counterweight to the repatriation tax savings that can be realized, and appear to assess the case for an inversion based on the combination of both factors. Future research could shed more light on these apparent behavioural differences between managers and investors, either in the context of HQ relocations or in other contexts. Moreover, managers considering an inversion may benefit from our findings by realizing that their inclination to decide on an inversion based solely on the scope for repatriation tax savings may backfire, in that this inclination may cause them to execute inversions characterized by large legitimacy-related risks, which – in turn – may result in high costs and, hence, decreased firm performance. Managers can avoid such overly risky inversions by taking into account their firm's government dependence and opting for an inversion only if that dependence is low enough to warrant the pursuit of repatriation tax savings. By doing so, they will likely avoid the

occurrence of excessive 'hidden costs' (Larsen et al., 2012) and, hence, that their decision to invert turns against them.

Like almost all prior event studies, we have implicitly assumed that investors are rational, profit-maximizing actors that do not form their own moral judgment about an event or – at least – do not let that judgment influence their decision to buy, hold, or sell the focal firm's shares. Taking a behavioural perspective, some studies have suggested, however, that investor reactions to events are not always fully rational (Schijven and Hitt, 2012) and sometimes influenced by emotions (Pfarrer et al., 2010). From such a perspective, outside shareholders that are US citizens (i.e., US retail investors) or that represent such citizens (e.g., US pension funds) could find inversions morally reprehensible for the same reasons as US officials do, and could therefore have a relatively high inclination to sell out in response to an inversion announcement. Inversion announcements by firms with more such shareholders could therefore be argued to yield lower CARs. Future studies may shed light on such possible effects of the composition of an inverting firm's shareholder base.

Besides registered seat transfers out of the US, those out of other countries have also become increasingly common (Voget, 2011). Some of these countries, such as South Korea, China, and India, are similar to the US in that they also levy a repatriation tax on income from abroad (KPMG, 2016). Future studies could explore the validity of our framework for those respective countries or compose a sample of multiple home countries to explore the role of home-country contingencies.

Besides firms from countries with a repatriation tax, those from countries without such a tax sometimes also move their tax residence abroad. Automaker FIAT, for instance, moved its tax residence from Italy to the UK after it acquired US-based Chrysler (Economist, 2014). Since Italy has traditionally exempted foreign income from taxation (PWC, 2013), the reason must have been another one than avoiding taxation of such income. Future studies could explore the reasons behind tax residence relocations by firms that did not face repatriation taxes in their original domicile, and assess how such relocations are received by the stock market.

Whereas we analysed stock market reactions to cross-border relocations of registered seats, future research could explore stock market reactions to cross-border relocations of corporate offices or parts of them. Corporate office relocations across borders on the one hand may be valued by investors because they enable firms from countries with a real seat doctrine to shift abroad their place of central management and control and, hence, their tax residence. Unlike registered seat relocations, corporate office relocations also have the advantage that they enable the development of closer ties with important foreign-based actors such as large clients, investors, and high-skilled workers (Baaij et al., 2015; Birkinshaw et al., 2006; Laamanen et al., 2012). On the other hand, firms relocating part or all of their corporate office abroad may lose legitimacy among domestic officials, not only because they may deprive the domestic government of tax revenues, but also – and perhaps even more importantly – because they tend to destroy domestic jobs (Laamanen et al., 2012), both among the HQ personnel whose function is offshored and in firms offering corporate support services. The exact way in which investors value these pros and cons of corporate office relocations remains to be explored.

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## NOTES

- [1] We also uncovered several US-registered parent firms that were not listed when they inverted. Prominent examples of such firms are Delphi Automotive, Fluid Media Networks, Lazard, PXRE Group, Santa Fe International, Travelport Worldwide, United National, and Vista Print.
- [2] We excluded those listed US firms that spun off a US-registered subsidiary to a foreign nation, because these firms themselves remained registered in the US. Like prior studies of inversions (Desai and Hines, 2002; Seida and Wempe, 2004), we also excluded firms that were acquired and integrated into a foreign-incorporated holding, because such firms underwent rather than undertook a registered seat relocation.
- [3] In most cases this share has even been kept below 60 per cent. The reason is that in 2004 the US government also implemented legislation to discourage inversions where the continuity of ownership ranges from 60 per cent to 80 per cent. Specifically, for this class of inversions, US taxes on capital gains from the transfer of assets to the new parent were no longer allowed to be offset by foreign tax credits or net operating losses (Marples and Gravelle, 2016).
- [4] Inverted firms' US income, on the other hand, remains subject to US taxation, since their former parent maintains its US registration, thus acting as a US subsidiary of the new parent.
- [5] Deferral is generally not permitted for foreign income from branches (i.e., unincorporated foreign affiliates) as well as for passive (i.e., non-operating) foreign income such as dividends, income from interest or royalties, or capital gains. In general, such forms of foreign income are subject to the US surtax immediately, even if they are not repatriated (Foley et al., 2007; Voget, 2011).
- [6] For two firms the estimation window was somewhat shorter (i.e., 193 and 152 days, respectively) because they made their inversion announcement less than 271 days after their initial public offering. The exclusion of these two firms yielded highly similar results that were robust across the different event windows.
- [7] When we omitted the imputed observations, we were left with a maximum sample of 80 inversion announcements, forcing us to estimate regression models with fewer control variables. We nevertheless obtained results that were similar to the ones reported below, although for the seven-day event window the level of support for Hypothesis 2 was somewhat weaker in some models.
- [8] They calculated these cash holdings based on confidential data from the US Bureau of Economic Analysis to which they had privileged access.
- [9] For the UK this variable is time-varying, since that country started to exempt foreign income from taxation during our sample window.
- [10] For inversions announced in 1998 – the first year for which the CRP reports lobbying data – we used an inverter's lobbying expenses in 1998. Inversions announced prior to 1998 were excluded from the lobbying sample. US law prescribes the disclosure of the lobbying expenses of all organizations that hire lobbying firms or in-house lobbyists, unless these expenses are below a specified threshold. For the use of lobbying firms this threshold is \$3000 a quarter, whereas for the use of in-house lobbyists it is \$12,500. Hence in theory a firm can spend up to \$50,000 (4\*\$12,500) on lobbying a year and still be reported to have no lobbying expenses. However, this reporting complication is unlikely to be a reason for concern, since those inverters for which the CRP reported non-zero lobbying expenses on average spent much more than \$50,000 on lobbying a year, i.e. \$1.58 million. Consequently, even if some of the zeros in our dataset represent expenses up to \$50,000, such expenses are still relatively close to zero and, hence, can safely be treated as such. Moreover, as described below, the use of complementary data on PAC donations, which do not suffer from this complication, yielded highly similar results.
- [11] When we used the raw intensities, we obtained similar results that were robust across the different event windows. We also constructed two dummy variables distinguishing inverters that had lobbying expenses and PAC donations from inverters that did not have them. The use of these dummy variables also yielded similar results that were robust across event windows.
- [12] The graph based on the results of Model 3b showed a similar pattern.
- [13] The figure for firms with a low vs. high PAC donation intensity shows the same pattern.
- [14] See [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

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