Competitive Externalities of Tax Cuts

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Abstract

We examine how tax cuts that selectively benefit some firms are related to the economic performance of their direct competitors. Using the repatriation tax holiday under the American Jobs Creation Act of 2004 as our setting, we find that the temporary decrease in the U.S. tax burden on foreign earnings for repatriating firms has a negative economic effect on the performance of their non-repatriating product market competitors. This negative externality is stronger when competitors face financial constraints and operate in more concentrated product markets. Furthermore, lenders anticipate this negative externality by increasing borrowing costs on repatriating firms' competitors. Overall, our results uncover important consequences of tax cuts in affecting the competitive landscape.

Keywords: American Jobs Creation Act of 2004 (AJCA); product market; competition; predation; debt covenants.

1. INTRODUCTION

Corporate tax cuts are used as a policy tool to boost corporate investment and job growth. Economic models demonstrate that corporate investment behavior is sensitive to the cost of capital, and tax cuts reduce firms' cost of capital (Feldstein 1970; King 1977; Auerbach 1979; Bradford 1981; Poterba and Summers 1985). However, in a setting where only some firms receive tax relief, it is unclear what the implications of such selective tax benefits are on the economic performance of competing firms that might not directly benefit from the tax relief. Are firms that do not receive tax benefits at a competitive disadvantage compared to firms that do? We attempt to answer this question by using the repatriation tax holiday under the American Jobs Creation Act of 2004 (AJCA) as a setting to test whether selective corporate tax relief introduces externalities by repatriating firms on their direct competitors.

The AJCA provided a one-time and economically significant reduction in the U.S. tax rate—from 35% to 5.25%—applied to the foreign earnings of U.S. multinational corporations (i.e., repatriation tax holiday).[1] The U.S. Congress implemented the AJCA to encourage U.S. domestic investment by multinational firms with repatriated funds. Over the 2004-2006 period, U.S. multinationals repatriated about $312 billion from their foreign subsidiaries (Redmiles 2008). Since the AJCA conferred tax relief on only some firms (i.e., firms with unremitted foreign earnings), its enactment provides a fruitful testing ground to examine whether and how selective tax relief that lowers some firms' cost of capital affects the economic performance of competing firms that might not benefit from the tax relief. That is, although the extant research examines the effects of repatriated funds on *repatriating* firms (see Blouin and Krull 2009;

[1] Technically speaking, the AJCA allowed for an 85% dividends received deduction (DRD) for foreign earnings repatriated to the U.S. parent corporation. As a result, only 15% of foreign earnings were taxed at the U.S. rate (with an offsetting foreign tax credit for 15% of foreign taxes paid, if any). Therefore, the 35% U.S. corporate tax rate × (1 minus 85% DRD) results in a 5.25% tax rate on repatriated foreign earnings. The foreign tax credit, if any, would reduce the 5.25% rate even further. See Section 2 for additional details.

Dharmapala, Foley, and Forbes 2011; Faulkender and Petersen 2012; Dong and Zhao 2017), it is an open question of how *competing* firms are affected by their rivals' repatriation decisions.

Existing economic theory provides guidance on potential consequences of selective corporate tax relief. Bolton and Scharfstein (1990) develop theoretical support for one channel, which we call the "tax channel," through which tax cuts might affect competitors. Their theory suggests that in the presence of credit rationing,[2] "cash rich" firms (e.g., firms with strong balance sheets) can engage in strategies to drive out financially constrained competitors. Examples of such strategies include, but are not limited to price wars, strategic store locations, targeted advertising, product improvements, and product differentiation. Although the actions described in Bolton and Scharfstein (1990) focus specifically on the idea of predation, or the infliction of economic injury on competing firms, the intuition applies to broader competitive strategies as well. Namely, the theory suggests competitive strategies have at least two goals. First, firms may seek to damage their competitors' economic performance and availability of *internal* capital, especially when those competitors are financially constrained. Second, firms may increase their competitors' cost of *external* capital by causing the competitors' financial constraints to bind (e.g., violating loan covenants). Irrespective of the goals, firms pursue various strategies to dampen their competitors' ability to fund investment and increase the probability of capturing larger market share in the long-run.[3] In fact, reflecting concerns over how selective tax cuts might affect competition, the U.S. Senate Permanent Subcommittee on Investigations suggested that the AJCA's tax benefits left domestic corporations at a competitive disadvantage (Levin et al. 2011).

[2] Credit rationing is best explained in Chapter 3 of Tirole's the Theory of Corporate Finance text, "A would-be borrower is said to be *rationed* if he cannot obtain the loan that he wants even though he is willing to pay the interest that the lenders are asking, perhaps even a higher interest."

[3] Engaging in competitive strategies, including predation, does not guarantee greater market share and pricing power in the future. However, such activities are carried out to increase the probability of competitors' exit from the product market and afford the surviving firm greater pricing power (Joskow and Klevorick 1979).

However, one concern of identifying the competitive effects of tax cuts is that it is difficult to disentangle the tax channel from a cash channel, since tax cuts can also increase cash balances by lightly taxing current income. This concern is important because Fresard (2010) and Chi and Su (2016) find that higher cash balances help fend off competitive threats from rivals. In the AJCA setting, the repatriation tax cut did not provide a shock to overall global cash amounts for repatriating firms since foreign income has already been earned; it is simply located overseas, yet repatriation taxes increase the cost of its use in the U.S. As a result, the AJCA setting holds the cash channel constant and unambiguously lowers the cost of internal financing by temporarily lowering the U.S. tax rate on foreign earnings. Therefore, based on the intuition in Bolton and Scharfstein (1990), we predict that the AJCA tax holiday made it cheaper for repatriating firms to fund strategies that would leave competing firms' economic performance negatively affected.[4]

To analyze whether tax cuts affect product market competitors in the AJCA setting, we first hand collect the amount of repatriated foreign earnings from firms' financial statements, namely 10-Ks, 10-Qs, and 8-Ks. We infer the extent to which firms benefited from the reduced repatriation tax burden by measuring the repatriation amounts; if firms benefit more from the holiday, they would repatriate more. Next, we define the product market space using Hoberg and Phillips' (2016) Text-based Network Industry Classification (TNIC) data. These data identify firms' competitors based on the pairwise similarity of 10-K business and product market descriptions. Product market competitors identified in the TNIC data are unique to each firm, so each firm has its own product market space. Unlike fixed-industry classifications such as the Standard Industrial Classification (SIC) and the North American Industry Classification System (NAICS), the TNIC data are time-variant and thus more informative because they annually

[4] Section 2.4 provides a more formal explanation on the connection between tax cuts and competitive activities.

update a firm's competitors based on product descriptions in firms' financial statements.[5] Finally, we combine the repatriation amounts with the product market competitors identified in the TNIC data to measure the repatriation amounts in each TNIC-defined product market space at different points in time. This approach allows us to estimate the economic effect—measured as changes in cash flows, current ratio, net worth, and interest coverage—of the annual repatriation amounts of repatriating firms on their direct product market competitors.

We find that repatriation amounts under the AJCA are negatively related to the operating performance of repatriating firms' competitors. For a one standard deviation increase in firms' repatriation amounts, we estimate that competitor firms' cash flows decline by 0.33% of total assets, or the equivalent of $12.9 million based on the average total assets in our sample. Given the sample mean cash flows of 11.7%, a 0.33% decline is quite substantial (i.e., 2.8% of mean cash flows). This negative externality is stronger when competitors face financial constraints; we estimate that financially constrained competitors' cash flows decline by 0.39% of total assets, or the equivalent of $15.3 million based on the average total assets in our sample. Furthermore, the negative externalities are stronger when competitors (1) operate in more concentrated product markets; (2) exhibit higher product similarity; and (3) did not repatriate, or repatriated relatively less foreign earnings under the AJCA.[6] These negative externalities of repatriation amounts on the operating performance of competitors suggest that the theoretical prediction in Bolton and Scharfstein (1990) can be manifested through a tax channel.

Furthermore, we examine whether lenders price the cash flow risk arising from competitive

[5] Appendix A provides an example of the pairwise similarity of 10-K business and product market descriptions. For more information on the TNIC data and the construction of the pairwise similarity score, please visit Hoberg and Phillip's online data library (http://hobergphillips.usc.edu) and Hoberg and Phillips (2016). Hoberg, Phillips, and Prabhala (2014), Hoberg and Maksimovic (2014), and Hoberg and Phillips (2016) have utilized the TNIC data in their respective analyses.

[6] We do not require that repatriating firms only compete with non-repatriating firms. Thus, the comparison we make is not between repatriating firms and non-repatriating firms, but rather competitors with repatriating firms and competitors without repatriating firms in their product market spaces. See Figure 1 and Section 3.2 for more details.

strategies taken by repatriating firms against their competitors. We find that lenders price this cash flow risk. For a one standard deviation increase in firms' repatriation amounts, competitors face a 9.86 basis point increase in their loan costs relative to loan costs for competitors without repatriating rivals. This increase translates to a $2.1 million increase in interest payments. Our results also suggest that lenders' pricing is anticipatory because it occurs one year before the negative impact of repatriation by firms on their competitors' economic performance.

There are at least two challenges with the AJCA setting in attributing our results on competitive externalities to a tax channel. First, the enactment of the AJCA may have been endogenous to economic conditions of industries in which repatriating firms are located. That is, the U.S. Congress may have implemented the AJCA to offset the falling economic conditions for certain industries. In such a case, attributing a decrease in economic performance of competitors to repatriating firms' selective tax benefits would be incorrect because the AJCA may have been intended to simply slow down the already-decreasing economic performance in some industries. Second, there may have been other contemporaneous developments that could have changed investment opportunities and/or the product market outlook. Such developments and the change in product market outlook might drive the poorer performance of competing firms we observe.

We take several steps to address these challenges. First, in robustness checks we implement within industry-year estimation (i.e., two-digit SIC-year fixed effects), which allows us to identify competitive externalities within the same industry and year.[7] Thus, even if the AJCA was implemented to offset economic downturns in certain industries, we are able to examine the economic performance of competitors as a function of rival firms' repatriation amounts within the same industry and year. This estimation also mitigates concerns over contemporaneous

[7] The key idea is that not every firm in the same two-digit SIC industry faces the same set of competitors. The TNIC data allows us to identify different sets of competitors unique to each firm in each two-digit SIC industry.

events affecting our results by purging unobserved time-varying industry shocks that might also have affected the economic performance of competing firms. Second, the AJCA clearly and exogenously decreased the cost of internal capital for repatriating firms, but did not change total cash balances (as mentioned above), investment opportunity sets, and/or product market outlooks.

To support our argument that the AJCA did not create product market shocks such as demand shocks, and that the enactment of the AJCA did not coincide with either positive or negative demand shocks for certain sectors of the U.S. economy, we also examine a time-series plot of the average number of product market competitors faced by firms. If certain product markets' outlooks changed around the enactment of the AJCA and led to either entry or exit, then we should observe a noticeable change in the average number of competitors faced by firms located in those product markets. We do not, which is consistent with demand shocks not explaining our results. Lastly, we supplement our main analyses by taking a market-based approach reflecting the intuition in Bolton and Scharfstein (1990) that firms may want to influence competitors' external cost of capital. We find that lenders price competitor firms' cash flow risk arising from competitive strategies taken by repatriating product market rivals.

Our study has two main contributions and implications. First, our results suggest that selective corporate tax relief yields negative competitive externalities. Specifically, firms that might not directly benefit from tax cuts, but compete with firms that do, suffer negative economic consequences. Consistent with Bolton and Scharfstein (1990), we demonstrate that the unintended consequence of selective corporate tax relief works through competitive activities in product markets. Although we do not examine long-run effects, our results suggest that these negative externalities manifest in at least the short-run around the time of the AJCA.

Furthermore, for tax year 2018, the U.S. has effectively implemented another—this time

permanent—repatriation tax holiday as part of broader corporate tax reform.[8] If the entire amount of cash held overseas by U.S. multinationals were repatriated, the amounts could be as high as $2.6 trillion, which is over 8 times the total amount repatriated under the AJCA.[9] By examining the competitive externalities of repatriations under the AJCA, we attempt to shed light on whether another repatriation tax holiday could benefit or damage the operating performance of competing firms. Although it is difficult to extrapolate the economic magnitude of the effects we document in this study to newly enacted tax law, our results suggest that the AJCA adversely affected competitor firms. Therefore, our results can caution policymakers on the potential unintended consequences of another repatriation tax holiday as U.S. multinationals use their lightly taxed foreign funds to compete with firms in the U.S. that might not have such funds.

Second, academics and media outlets have differing opinions on whether a repatriation tax holiday is an effective policy tool to promote domestic investment and employment. While Faulkender and Petersen (2012) conclude that financially constrained firms did increase domestic capital expenditures, Blouin and Krull (2009), Dharmapala et al. (2011), and the media have suggested that because a large share of repatriated funds were paid out to shareholders of repatriating firms, there was little to no effect on domestic investment and employment.[10] Instead of focusing on repatriating firms only, we focus on their direct competitors to analyze whether they were challenged by repatriating firms. In fact, to the extent repatriated funds were simply paid out to shareholders, we should not find results consistent with competitive externalities of

[8] The Tax Cuts and Jobs Act levies a one-time tax of 15.5% on foreign unremitted liquid assets (e.g., cash) and 8% on foreign unremitted illiquid assets as the U.S. moves from a worldwide to territorial tax system.

[9] "Companies are holding a $2.6 trillion pile of cash overseas that's still growing", *CNBC*, April 28, 2017, https://www.cnbc.com/2017/04/28/companies-are-holding-trillions-in-cash-overseas.html

[10] "One-time tax break saved 843 U.S. corporations $265 billion", *The New York Times*, June 24, 2008, http://www.nytimes.com/2008/06/24/business/worldbusiness/24iht-24tax.13933715.html?mcubz=3; "A Stranded $2 Trillion Overseas Stash Gets Closer to Coming Home", *The New York Times*, November 4, 2016, https://www.nytimes.com/2016/11/06/your-money/strategies-corporate-cash-repatriation-bipartisan-consensuss.html?mcubz=3

the AJCA; we examine this issue and confirm no results in cases of high shareholder payouts.

We caution that our evidence is indirect as it is inherently difficult to pinpoint specific competitive *strategies* (e.g., price wars). As a result, the literature relies on providing evidence on competitive *effects* that are "consistent with" activities such as predation (see Bernard 2016 and Shroff 2016). Therefore, we rely on the variation in competing firms' economic performance as an imperfect, but insightful summary indicator of the competitive externalities of tax cuts.

The rest of the paper is organized as follows. Section 2 provides institutional and theoretical background and develops our hypothesis. Section 3 describes our data, empirical strategy, and summary statistics. Section 4 presents main results and additional analyses. Section 5 concludes.

2. BACKGROUND AND HYPOTHESIS

2.1 The AJCA Repatriation Tax Holiday

To promote U.S. domestic investment and job growth, the U.S. Congress added Section 965 to the Internal Revenue Code as a part of the AJCA. This section allowed U.S. multinationals to exclude through the dividends received deduction (DRD) 85% of their subsidiaries' foreign earnings from the U.S. tax typically levied on those foreign earnings. As a result, this generous DRD provision incentivized U.S.-based multinational firms to bring back, or repatriate, to the U.S. their foreign cash holdings.

Several studies examine the determinants and use of foreign cash holdings. Studies on the determinants of foreign cash holdings suggest that the cost of repatriating foreign income is an important factor in determining U.S. firms' decision to bring back their foreign cash (Foley, Hartzell, Titman, and Twite 2007; Graham, Hanlon, and Shevlin 2011). Other studies examining the use of foreign cash holdings find that the tax cost of foreign cash holdings is positively associated with foreign acquisitions and serve no precautionary purposes (Hanlon, Lester, and

Verdi 2015; Faulkender, Hankins, and Petersen 2017). By reducing the tax cost of repatriating foreign income under the AJCA, the U.S. Congress reduced the extent of internal financing frictions and as a result, incentivized U.S. multinational firms to repatriate foreign cash holdings and use the funds toward approved domestic investments.

To take advantage of the DRD provision, U.S. multinationals had to meet certain restrictions. First, the repatriated foreign earnings had to be in cash. Second, the amount of repatriated cash eligible for the DRD provision was limited to the greatest of: (1) $500 million, (2) the amount of foreign earnings designated as permanently reinvested earnings under the Accounting Principles Board (APB) 23 disclosed in firms' financial statements, or (3) the amount of tax liability on foreign earnings divided by 0.35 (the U.S. corporate statutory tax rate). Third, the repatriation amounts had to be in *excess* of the average amount of dividends received from controlled foreign corporations over the three base-period years ending on June 30, 2003.[11]

Finally and most relevant to our study, the repatriation amounts had to be used in the U.S. for at least one of the following aims: hiring, training, capital investments, research and development, debt repayment, acquisitions, advertising and marketing, and intangible property (IRS Notice 2005-10). The U.S. Congress made it clear that the repatriation amounts were *not* to be used for certain actions, such as executive compensation, shareholder distributions, and tax payments. Interestingly, evidence in Blouin and Krull (2009), Dharmapala et al. (2011), and others suggests that shareholder distributions were a major use of funds despite these restrictions, likely because firms were not required to directly track the use of repatriated cash (i.e., cash is fungible).

2.2 The Cost of Internal Financing

To the extent that U.S. multinationals generate cash from foreign operations, then without a

[11]The base period years are the three years among the five years ending on June 30, 2003, disregarding the two years for which the repatriation amounts (i.e., dividends from controlled foreign corporations) were highest and lowest among the five years.

repatriation tax holiday, cash effectively becomes "trapped" overseas because foreign earnings are usually taxed at a rate much lower than the 35% U.S. corporate tax rate if the foreign earnings are repatriated (Blouin and Krull 2009). As a result, amassing foreign cash, but not being able to access it easily, raises the cost of internal financing as firms will otherwise borrow domestically or forgo domestic investments to finance domestic operations, and avoid the repatriation tax. However, with a repatriation tax holiday, accessing foreign funds for U.S. domestic use becomes less costly.

To illustrate how a repatriation tax holiday can lower the cost of internal financing, we provide a simple numerical example. Suppose a U.S. multinational firm faces the top U.S. marginal tax rate of 35%, a foreign tax rate of 10%, and that the firm earned $1 million in cash earnings in total from their foreign subsidiaries by the end of t-1. Also assume that the firm does not save cash for precautionary purposes[12] and that the firm requires foreign earnings to pursue its investment opportunities in the U.S. in period t. Regardless of whether the U.S. multinational repatriates its foreign earnings, it incurs a foreign tax liability of $100,000, or the 10% foreign tax rate times the $1 million in foreign earnings. If the firm decides not to repatriate, the remaining $900,000 remains overseas and can be used for foreign investment. However, to repatriate its foreign cash of $1 million, the U.S. multinational will incur an additional U.S. tax liability with an offsetting tax credit for foreign taxes paid. This additional tax liability is referred to as the repatriation tax. In our example, the firm will pay an additional $250,000 to the U.S.[13] Thus, in total, the firm pays $350,000 in total taxes (i.e., equivalent to the 35% U.S. corporate tax rate × $1 million in foreign earnings), leaving $650,000 to pursue U.S. domestic investment opportunities in period t.

[12] Almeida et al. (2004) formalize and empirically test that financially constrained firms manage their liquidity by saving more cash from their cash flows. For simplicity, we ignore financing constraints in our example.
[13] U.S. "repatriation" tax = ($900,000/(1-0.10))*(0.35) total U.S. tax - $100,000 credit for foreign taxes paid.

With the AJCA repatriation tax holiday that excludes 85% of foreign earnings from U.S. tax, the after-tax return from the U.S. multinational's foreign subsidiaries increases, which in turn decreases the cost of internal financing. The AJCA limited the amount of foreign tax credits that could offset the U.S. tax liability to 15% of foreign tax payments (IRS Notice 2005-10). Although the firm must still pay the $100,000 in foreign taxes because of the 10% foreign tax rate, the U.S. corporation in our example would only pay an additional $37,500 to the U.S. under the AJCA tax holiday.[14] In total, the firm pays $137,500 in total taxes, leaving $862,500 to pursue U.S. domestic investment opportunities in period t. Thus, for the same amount of before-tax foreign earnings, the U.S. firm's after-tax return increases when the tax holiday is in place, as the firm can deploy a greater amount of internal financing to pursue its U.S. domestic investment opportunities. In other words, the average tax rate decreases under the DRD provision of the AJCA, which in turn decreases the U.S. multinational corporation's cost of internal financing.

2.3 Theory and Evidence

Studies in economics and law provide guidance on understanding how competitive activities by beneficiaries of corporate tax relief may damage the economic performance of firms that potentially receive no such relief, yet compete directly in a product market against those beneficiaries. Economic theory suggests that product market rivals may undertake activities to drive out their competitors and/or to deter market entry in the hope of gaining market power and pricing power in the long-run. One example of a competitive activity is known as predation.

Under the "long-purse" theory of predation, Benoit (1984) suggests that rivals with "deep-pockets" may prey on financially constrained competitors because of the constrained competitors' inability to endure the predation. For example, in the presence of information asymmetry

[14] U.S. "repatriation" tax = ($900,000/(1-0.10))*(1-0.85)*(0.35) total U.S. tax – (0.15*$100,000) credit for foreign taxes paid. Notice that the foreign tax credit reduces the effective tax rate under the AJCA to below 5.25%.

between a capital provider and potential prey, the capital provider uses the prey's current and/or past profits as information to decide whether to provide further financing. Thus, observing the prey's profits that are distorted by predation (i.e., lower profits), the capital provider may not extend its credit, leaving the prey with no choice but to exit its product market.

Milgrom and Roberts (1982) and Fudenberg and Tirole (1986) introduce the "signaling" and "signal-jamming" theory of predation. In Milgrom and Roberts (1982), predators establish their reputation as predators (i.e., signaling) to deter entry by potential competitors. In Fudenberg and Tirole (1986), predators attempt to change their competitors' belief about future profitability by lowering competitors' current profits (i.e., signal-jamming). In addition, predators deter entry by engaging in activities that lower the net present value of entering a product market.

Bolton and Scharfstein (1990) show that predation can arise in equilibrium when financial constraints are used as a tool to mitigate moral hazard problems between the capital provider and its borrower. Predators can take advantage of the fact that the capital provider imposes financial constraints to maintain the credibility of the contract with the borrower. Thus, the predator will attempt to drive down the competitor's performance to make the constraints binding. Ultimately, the predator seeks to eliminate its competitor's access to external capital and induce exit.

Regardless of the specific mechanism at work, the consequences of such competitive strategies have been inferred empirically by focusing on the likely outcomes of such activities (e.g., reduction in competitors' cash flows). Under this approach, existing empirical studies document evidence consistent with predation. Using shifts in import tariffs as a source of exogenous variation to product market competition, Fresard (2010) finds a causal relation between corporate cash holdings and product market performance in that incumbent firms with larger cash holdings gain market share as competition increases in their industries. Fresard (2010)

argues that the positive relation between cash holdings and future market share is evidence of cash-rich incumbent firms deterring entry and limiting competitors' investment. Separately, Chi and Su (2016) document evidence of a higher valuation on cash holdings for firms facing higher predatory threats, consistent with cash holdings being important in fending off predatory threats.[15] Although the AJCA tax holiday did not change the total cash holdings of companies—rather, it reduced the internal financing friction through a reduced repatriation tax burden—applying the intuition behind the studies on predation allows for the possibility of competitors to experience negative externalities by repatriating firms through the tax channel.

2.4 Simple Framework and Hypothesis

We provide a simple framework to motivate our hypothesis and establish the link between taxes and competition as inferred from predation theory. In this simple model, we assume that a firm funds its competitive strategies with retained earnings (i.e., a "new view" firm).[16] The firm can choose competitive actions p in the beginning of period 0 and receive before-tax return of $f(p)$ at the end of period 1 (i.e., $f(p)$ represents the expected return from having greater market and/or pricing power). At the end of period 1, the firm liquidates and pays out its gain from the competitive actions. If the firm decides not to engage in competitive actions, then it returns the cash equivalent of p to investors who can earn r at the end of period 1 by investing the cash in different investment vehicles at the beginning of period 0. Cash distributions to investors are taxed at τ_p, and $f(p)$ is taxed at τ_c. Given the above assumptions, the firm engages in competitive actions in the beginning of period 0 such that:

$$f(p)(1-\tau_c)(1-\tau_p) = r(1-\tau_p) \quad (1)$$

[15] Billett, Garfinkel, and Yu (2017) also support the theory of predation by documenting the presence of the tradeoff between agency concerns and predation risk.
[16] See Auerbach (1979), Bradford (1981), and King (1977).

That is, the firm engages in competitive actions to the point where the after-tax return of $f(p)$ equals r. It is clear from Eq. (1) that the after-tax return of $f(p)$ is decreasing in τ_c. In an environment where only some firms benefit from tax relief, Eq. (1) suggests that the after-tax return of $f(p)$ is increasing only for those firms experiencing the tax relief. The implication of the simple framework is that the decrease in the cost of internal capital for repatriating firms under the AJCA increases these repatriating firms' propensity to engage in competitive actions.

In an ideal world where granular data on product prices and costs, targeted advertising, store locations, and/or other competitive strategies are available, repatriating firms' actions that produce competitive externalities can be directly examined. However, such data are not generally available. For example, predation itself is difficult to uncover (Joskow and Klevorick 1979; Bernard 2016; Shroff 2016) because low product prices can be the result of predatory pricing or competitive pricing. Given these challenges, we rely on prior theoretical and empirical literature that *infers* competitive externalities (rather than sources) by testing for a change in competitors' economic performance. Specifically, we test the following directional hypothesis:

H_1: Repatriation amounts by firms under the American Jobs Creation Act of 2004 tax holiday had a negative effect on competitor firms' economic performance.

In testing our hypothesis, our empirical tests align with theory that emphasizes the role of capital providers and financial constraints (Benoit 1984; Bolton and Scharfstein 1990). In particular, we examine whether competing firms who face rivals that benefited from the repatriation tax holiday experience a decline in economic performance. We further investigate whether the decline in competitors' economic performance varies with financial constraints (access to external capital) and product market characteristics (e.g., concentration).

Despite our directional hypothesis, there is at least one reason why we might not detect competitive externalities of tax cuts in our setting. If the intended objectives of the AJCA in

promoting capital investment and job growth were successful, then the increase in employment rates or wages in the domestic economy would have translated into higher disposable income for U.S. households and would have benefited non-repatriating and other competitor firms through the increase in U.S. households' consumption levels. Jappelli and Pistaferri (2010) formalize and suggest that income shocks would lead to households' consumption response. Therefore, if the tax holiday on foreign earnings led to higher employment or wages, affected U.S. households (i.e., those households with individuals that are employed or better paid as a result of the AJCA) might have responded by increasing their consumption levels.[17] Moreover, Blouin and Krull (2009) and Dharmapala et al. (2011) suggest that between 20% and 90% of repatriated funds were paid out to the shareholders of repatriating firms. Thus, the shareholders of repatriating firms may have also responded to the AJCA by increasing their consumption levels, benefiting the competitors of repatriating firms through the increase in U.S. households' consumption levels. This "household spending channel" would work against finding negative results for competitor firms from repatriating firms' competitive actions.

3. METHOD

3.1 Data

Information on repatriation amounts recently became available in the Tax Footnotes file in Audit Analytics. However, whether Audit Analytics collected accurate repatriation amounts under the AJCA is not clear given that hand-collected repatriation amounts differ across several studies. For instance, Faulkender and Petersen (2012) identify 442 repatriating firms while Blouin and Krull (2009) identify 455 repatriating firms. The repatriation amounts between the two studies differ as well. Faulkender and Petersen (2012) identify $298 billion in repatriations while Blouin and Krull (2009) identify $310 billion. Regardless of the variation in the number of

[17] See Di Maggio et al. (2017) and Shapiro and Slemrod (2009) on how households respond to income shocks.

repatriating firms and repatriation amounts, both papers compare their repatriation amounts to Redmiles (2008) who utilize IRS data and approximates $312 billion of total repatriations.[18] Given the variation in the number of repatriating firms and repatriation amounts, we also hand collect the amount of repatriated foreign earnings from firms' 10-Ks, 10-Qs, and 8-Ks. To hand collect repatriation amounts, we first use Compustat to isolate U.S. firms that have positive foreign earnings at some point during the five-year period surrounding the enactment of AJCA. We yield 10,787 firm-year observations. Second, we read relevant paragraphs in the firms' 10-Ks, 10-Qs, and 8-Ks from 2004 to 2006 to determine the repatriation amounts for each firm.

To hand collect their data, Faulkender and Petersen (2012) use a Perl script to identify those filings containing discussions of the AJCA. Blouin and Krull (2009) identify relevant filings by searching for FSP 109-2 disclosures in Lexis Nexis.[19] The hand-collection approach we take is like that of Brennan (2014) who uses keyword searches to identify relevant paragraphs discussing the AJCA in firms' 10-Ks, 10-Qs, and 8-Ks.[20] We provide three examples of paragraphs that contain discussions of the AJCA in Appendix B.

Panel A of Table 1 presents our aggregate sample statistics. We find 1,339 firms that discuss the AJCA and 443 firms that repatriated foreign earnings under the AJCA. A small number of firms repatriated foreign earnings for which a portion did not qualify for the AJCA tax holiday while the remaining portion of earnings did qualify. We excluded the additional repatriated foreign earnings such that the repatriation amounts under the AJCA in our data are directly eligible for the AJCA's favorable DRD provision. Out of 443 firms that repatriated foreign

[18] Redmiles (2008) utilizes information on Form 8895 and Statistics of Income corporate tax return sample for tax years 2004-2006 to approximate the total repatriation amounts.
[19] Firms followed FASB Staff Position No. 109-2 to disclose their evaluation of the effect of the AJCA on their financial statements.
[20] We searched for following words: "reinvest", "indefinite", "permanent", "unremit", "unrepat", "repat", "undistributed", and "jobs".

earnings, 423 firms disclosed their repatriation amounts. The total repatriation amounts by the 423 firms were $305 billion.[21] Compared to $312 billion identified by Redmiles (2008), our data set includes 98% of the foreign earnings repatriated under the AJCA. Panel B of Table 1 shows repatriation amounts over the repatriation tax holiday years (i.e., 2004-2006). Of $305 billion repatriated, $275 billion is repatriated at the end of fiscal year 2005, and the remaining amounts are repatriated over years 2004 and 2006.

Table 2 presents the repatriation amounts by three-digit SIC industries. Specifically, we report the three-digit industries that in aggregate repatriated at least $3 billion under the AJCA. To ensure that our data are comparable to prior literature, we present Table 2 from Faulkender and Petersen (2012). The difference in total repatriation amounts by three-digit SIC industries between our study and Faulkender and Petersen (2012) is negligible.

We merge our repatriation amounts with Hoberg and Phillips' (2016) Text-based Network Industry Classification (TNIC) data and Nini, Smith, and Sufi's (2012) covenant violation data. To test whether the repatriated amounts under the AJCA are related to competing firms' economic performance, we identify a group of rival firms using the data from Hoberg and Phillips (2016). They identify firm-centric product market rivals (i.e., the product market space) based on the pairwise similarity of firms' 10-K business descriptions.[22] Using the pairwise product similarity scores, Hoberg and Phillips (2016) define minimum product similarity thresholds such that any two firms with product similarity scores above the threshold are placed in the same product market. Once it is determined that no more firm pairs can be added to the product market, the Text-based Network Industry Classification is fixed for a fiscal year.

[21] We also collected the tax cost associated with the repatriation amounts. The tax cost hovers around the 5.25% tax rate (i.e., 0.35*(1-0.85)).

[22] Hoberg and Phillips (2016) construct product similarity scores based on the similarity of two firms' 10-K product description. Appendix A provides an example of the pairwise similarity of 10-K product market descriptions.

There are two main advantages of using Hoberg and Phillips' (2016) TNIC data to identify a group of competing firms. First, the TNIC relaxes the assumption that firms within an SIC or NAICS industry code actually compete against each other, which is not necessarily the case.[23] Second, the TNIC can define product markets based on firms' description of their products. Since firms' 10-K product descriptions change over time, the TNIC also changes over time. This flexibility in the TNIC data aids our study by allowing us to identify a group of rivals for each competing firm in our sample just before the enactment of AJCA. Since a group of rivals defined in the TNIC data varies over time, competitive activities may affect the group composition (e.g., firms moving into a group or competitors dropping out of their group). We fix the group of rivals (i.e., product market space) for each competing firm by using the TNIC group as defined in 2003.

We use Nini, Smith, and Sufi's (2012) covenant violation data to test whether the repatriation amounts under AJCA are related to the likelihood of covenant violations for the repatriating firms' competitors. According to Bolton and Scharfstein (1990), a cash-rich firm may challenge the performance of its competitors to make their competitors' financing constraints binding. If competitor firms' financing constraints bind due to a cash-rich firm's competitive activities, then competitor firms may lose their external source of funding or undergo unfavorable changes in their debt contracts. In fact, Roberts and Sufi (2009) report that approximately one-third of violations in their sample lead to some change in the violators' debt contracts.

Lastly, for our market-based test on whether lenders price competitor firms' cash flow risk arising from the competitive externalities of the AJCA, we combine our repatriation data with loan-package data from Loan Pricing Corporation's (LPC) Dealscan database. Dealscan provides

[23] As discussed in Hoberg and Phillips (2016), industry membership transitivity is restricted in fixed-industry classification such as the Standard Industrial Classification (SIC) and the North American Industry Classification (NAICS). For instance, SIC and NAICS defines an industry such that firm A, B, and C are all located in the same industry even though firms A and B may not compete with each other.

loan details both at the package level and the facility level.[24] Due to lack of variation in the facility-level variables and the possible correlation among facility-level variables within a loan package, we conduct our loan cost analysis at the package level.

3.2 Empirical Strategy

To identify competitive externalities of tax cuts, we rely on the predation literature that suggests competitors would experience a decline in economic performance in the presence of competitive threats. As a result, we focus our main analysis on *competitor* firms' (i.e., prey's) performance. We estimate the following first-differenced regression to analyze the effect of the AJCA repatriation amounts on the economic performance of repatriating firms' competitors:[25]

$$\Delta Firm\ performance_{i,t} = \beta \Delta R_{i,t-1} + \delta \Delta X_{i,t-1} + \theta \Delta T_{i,t-1} + \alpha_t + \varepsilon_{i,t} \quad (2)$$

where:

Δ	= first-difference operator,
i and t	= Competitor firm and year,
$Firm\ performance_{i,t}$	= measure of competitor firm's performance (e.g., cash flow),
R_{it-1}	= cumulative sum of repatriation of all rivals in competitor firm i's product market space from 2002 to year t-1,
X_{it-1}	= Competitor firm level control variables in year t-1,
T_{it-1}	= TNIC group level control variable in year t-1,
α_t	= year fixed effects,
ε_{it}	= error term.[26]

The unit of observation is the competitor firm-year. Including year fixed effects purges time-varying shocks and allows our empirical design to exploit the variation in ΔR_{it-1} across different

[24] A loan package/deal comprises loan facilities/loan tranches.

[25] Because the tests are firm- (or node-) centric, repatriating firms can be the repatriating competitor, or the competitor firm against which another repatriating firm is compared. For different firms in the center of the node, the remaining firms, *regardless of their repatriation activities*, act as the comparison sample. We also use a finer comparison group when we include industry-year fixed effects in our robustness tests.

[26] To address heteroskedasticity and arbitrary correlation in our error term, we cluster standard errors at the firm level. The TNIC definition utilized in this study is as granular as the three-digit SIC definition (Hoberg and Phillips 2016). Although the TNIC definition utilized in this study defines firm centric competitors, it is possible that the variation in our independent variable of interest (i.e., ΔR) largely arises at the two-digit SIC level (i.e., a level higher than the three-digit SIC). Thus, we ensure that our standard errors are not deflated by clustering standard errors by the two-digit SIC as well (Bertrand, Duflo, and Mullainathan. 2004). Our results do not change when we cluster standard errors by two-digit SIC.

competitor firms who have unique product market rivals defined by the TNIC data. Intuitively, Eq. (2) tests whether, in a given year, there exists a difference in the economic performance (i.e., $y_{it} - y_{it-1}$, where y is the performance variable) between two firms: (1) a competing firm with repatriating firms in its product market space and (2) a competing firm without repatriating firms in its product market space. In effect, β acts as a difference-in-differences estimator. Figure 1 illustrates our empirical design and how we link the TNIC data with repatriation amounts. A negative β coefficient would be consistent with tax cuts creating negative competitive externalities as repatriation amounts would be related to poorer competitor performance.

We measure R_{it-1} by first summing the annual repatriation amounts of firms located in a competitor firm's product market.[27] Then we sum the yearly product market repatriation amounts from 2002 to year t such that R_{it} represents the cumulative sum of repatriation amounts up to year t in the competitor firm's product market. For example, if firms in a product market (absent the competitor's activities) repatriated $3 billion in 2004 and $5 billion in 2005, R_{it} variable in year 2005 takes on the value of $8 billion. Constructing our independent variable in this way allows us to capture the magnitude of *increase* in repatriation amounts when the R_{it} variable is first-differenced. Furthermore, R_{it} is deflated by competing firm i's beginning-of-year total assets in the year that it first experiences repatriation by its rivals. Thus, the variation arising from different repatriation amounts in different years is effectively isolated. We alternately use four dependent variables of firm performance: cash flows, current ratio, net worth, and interest coverage ratio. The variable definitions are provided in Appendix C.

We control for both competing firm-level characteristics and the TNIC group-level/product market space-level characteristics. The product market space-level characteristics are unique to

[27] We do not include the competitor firm's repatriations amount, if any, in the total repatriation amounts R_{it-1} to maintain independence between the dependent and independent variables.

each competitor firm because each competitor firm has its own product market rivals/product market space. Thus, the subscript *i* in Eq. (2) is appropriate. In Eq. (2), we control for competing firms' investment opportunities and their ability to shield off competitive activities by including firm size, market-to-book ratio, cash, and leverage. Competing firms that are larger, have more cash, and more investment opportunities should be able to fend off competition relatively easily and would also have relatively more ability to pursue their positive net present value (NPV) projects. On the other hand, firms with higher leverage would be more exposed to competition and, if so, would be more affected by the repatriation amounts in their product markets. For the product market space-level characteristics, we control for Herfindahl-Hirschman Index (HHI) that is modified to fit the TNIC data structure (i.e., each competitor firm has unique time-varying HHI measure). We also control for the competitive effects of cash holdings documented in Fresard (2010) and Chi and Su (2016) by calculating the product similarity score-weighted average of cash holdings in a competitor firm's product market space each year. Finally, we control for sales volatility (i.e., sales volatility in a competitor firm's product market).

Estimating our first-differenced Eq. (2) purges time-invariant firm-specific fixed effects. The main advantage in estimating our first-differenced equation is to allow repeated or staggered treatment effects (i.e., repeated or staggered increase in repatriation amounts by firms over the 2004-2006 AJCA repatriation period). Several prior studies have used such a specification to allow for repeated or staggered treatment effects (Heider and Ljungqvist 2015; Smolyansky 2016). Furthermore, both our first-differenced Eq. (2) and the construction of the variable ΔR_{it-1} allow us to capture the variation in timing and magnitude of change in repatriation amounts across different product market spaces.

Our empirical design also relaxes the restriction that a competing firm is treated for the entire

duration of our sample period (2002-2008) if, for example, we were to use a coarse treatment and/or post-AJCA indicator variable. For example, a competing firm is considered treated in year 2004 if its product market rivals repatriate in year 2004; however, the same competing firm is not treated in year 2005 if its product market rivals do not repatriate in year 2005. Our specification increases the precision by which we can make inferences about whether and how repatriation amounts affect competitor firms' economic performance.[28]

The presence of staggered nature of our treatment effect is evident in Panel A of Table 3. Among 3,302 firms in our sample, approximately 59% experience one or more treatment during the sample period.[29] Furthermore, Panel B of Table 3 shows the presence of variation in the timing of the treatment variable. Ignoring repeated treatments in the panel and focusing on the year of first treatment, roughly 40% of the treated competitor firms in our sample face repatriation by their product market rivals in 2004, and the remaining treated competitor firms are treated in years after 2004. Our first-differenced specification accommodates variation in the timing of the treatment across firms and the repeated nature of treatment over time.

To address empirical challenges stemming from the possibility of an endogenous implementation of the AJCA and contemporaneous developments that might have affected the economic performance of competing firms, in robustness tests we implement a within industry-

[28] Although the first-differenced equation (2) facilitates the accommodation of staggered (repeated) nature of our treatment and allows a competitor firm to be treated in one period but act as a control firm in different period(s), we examine how our main result holds up in a levels specification using the following regression:

$$Firm\ performance_{i,j,t} = \gamma Treated_{i,j,t} + \delta Post_{i,j,t} + \beta Treated * Post_{i,j,t} + \theta X_{i,j,t-1} + \alpha_i + \alpha_{j,t}$$

Treatedi,j,t is constructed by decile-ranking the repatriation amounts (i.e., over the entire repatriation tax holiday years) in each competing firm's product market space. *Posti,j,t* is assigned 1 starting from year 2004 to 2008 for those competing firms that are never treated. For competing firms that are treated at least once anytime during the sample period, *Posti,j,t* is assigned 1 to periods a year after repatriation activity in the treated competitor firm's product market space. Control variables are identical to that of Eq. (2) and we include firm fixed effects and industry-year fixed effects in the specification. We find that the β coefficient from the above regression is -0.002 and statistically significant at the $p<0.10$ level. The β point estimate suggests that a unit change in *Treated* (e.g., moving from 6th decile to 7th decile), on average, results in the decline of cash flow by 0.2% of total assets (equivalent to $8 million based on the unconditional mean of total assets) in the post-treatment periods.

[29] 3,302 firms are reduced to 3,177 firms after filtering our sample. See Section 3.3.

year estimation (i.e., two-digit SIC-year fixed effects). This approach allows the identification of the competitive externalities of the AJCA within the same industry and year.[30] Since the TNIC data allow us to identify firm-specific rivals even within the same two-digit SIC industry, we can use within industry-year estimation to examine and compare the economic performance of competing firms as a function of their product market rivals' repatriation amounts within the same industry and year. Soaking up cross-industry differences helps us eliminate the alternative explanation that our results could be driven by the positive effect of the AJCA on economic performance of some firms located in a certain industry. Furthermore, within industry-year estimation purges unobserved time-varying industry shocks, mitigating concerns over the impact of contemporaneous developments on the economic performance of competing firms. Overall, we capitalize on the AJCA-led variation in the cost of internal capital and repatriating amounts for repatriating firms by actively addressing the above empirical challenges.

To support our argument that the AJCA did not create or coincide with product market (i.e., demand) shocks for certain sectors of the U.S. economy, we examine a time-series plot of the average number of product market competitors faced by firms. Figure 2 plots the average number of product market competitors faced by repatriating and all other firms in our sample. If the AJCA led to or coincided with either a positive or negative demand shock, then we should observe a distinct structural break in the average number of competitors faced by either group. For example, a military goods demand shock after the September 11, 2001 attacks led to an increase in the average number of competitors faced by military goods firms (see Hoberg and Phillips 2016). As is evident in Figure 2, the two time-series plots of the average number of competitors faced by both repatriating and all other firms show no difference in trend, suggesting

[30] Endogenous implementation of the AJCA follows the idea that the U.S. Congress could have intended to use the reduction in repatriation tax cost to offset falling economic conditions for industries that were most likely to benefit from the repatriation tax holiday. The concept of endogenous tax changes is formalized in Romer and Romer (2010).

that the enactment of AJCA did not lead to or coincide with product market shocks. In untabulated analysis, we also conduct a parallel trends test and confirm that the average number of competitors faced by both repatriating and non-repatriating firms show no difference in trend.

Lastly, we estimate the following regression to examine whether the negative externalities of the AJCA on competing firms are priced by lenders:

$$Log(Spread_{i,t}) = \sum_{q=-2}^{1} \beta_{R,t+q} R_{i,t+q} + \delta X_{i,t-1} + \theta L_{i,t} + \alpha_t + \varphi_i + \varepsilon_{i,t} \quad (3)$$

where:

i and *t*	= loan and year,
$Log(Spread_{i,t})$	= all-in-drawn spread,
R_{it+q}	= repatriation of all rivals in competitor firm *i*'s product market space in year t+q,
X_{it-1}	= Competing firm level control variables in year t-1,
L_{it}	= loan level control variable in year t,
α_t	= loan year fixed effects,
φ_i	= borrower (i.e., competing firm) fixed effects,
ε_{it}	= error term.[31]

In Eq. (3), $\beta_{R,t+q}$ are our coefficients of interest. They examine the dynamic effect of repatriation by firms on their product market competitors' incremental borrowing costs. Effectively, Eq. (3) tests whether the competitive externalities of the repatriation tax cut are priced by lenders, and by using leads and lags, shows *when* such effects are priced by lenders. We include borrower fixed effects to estimate how lenders price the risks arising from competitive strategies taken by repatriating product market rivals on a borrower. $Log(Spread_{i,t})$ is the log of all-in-drawn spread measured at loan initiations. Thus, similar to prior studies on the drivers of all-in-drawn spread (Bharath, Sunder, and Sunder 2008; Hasan, Hoi, Wu, and Zhang 2014), Eq. (3) examines whether the AJCA-led cash flow risks are priced in borrowers'

[31] We cluster standard errors at the firm level to address heteroskedasticity and arbitrary correlation in our error term. Also, as in Eq. (2), we do not include the competitor firm's repatriations amount, if any, in the total repatriation amounts R_{it-1} to maintain independence between the dependent and independent variables.

incremental borrowing activities. Eq. (3) controls for loan and borrower characteristics, including loan maturity, loan amount, loan type, whether the loan is secured, tangible net worth, current ratio, debt-to-tangible net worth, fixed charge coverage, and repayment risk captured by Altman's Z-score. Borrower characteristics are measured at the beginning of the year because contemporaneous characteristic controls can be endogenous to repatriation amounts in a competitor firm's product market (Gow, Larcker, and Reiss 2016). We obtain borrower characteristics from Compustat using the Dealscan-Compustat link file provided on Michael Roberts's website and constructed in Chava and Roberts (2008). Positive coefficients for either $\beta_{R,t}$ or $\beta_{R,t+1}$ would be consistent with lenders' expectation of borrowers' future cash flow risk stemming from the competitive externalities of the AJCA repatriation tax cut.

3.3 Summary Statistics

Our sample starts with all firm-year observations in the Compustat database for fiscal years 2002-2008. To facilitate comparability across results, we only keep observations in the intersection of the Compustat, Nini, Smith, and Sufi (2012), and Hoberg and Phillips (2016) data sets. We eliminate competing firm-year observations with missing TNIC group and covenant violation data, as well as financial firms (SIC 6000-6999). We further eliminate small competing firms (i.e., value of capital stock less than $5 million) and competing firms suspected to have undergone mergers and/or reorganization (i.e., firms with sales growth greater than 100%). Finally, we eliminate observations with missing control variables, leaving us with 15,880 competing firm-year observations for 3,177 firms.

Panel C of Table 3 presents summary statistics. The average repatriation amount by a firm in our sample is $14.7 million, and the average repatriation amount by firms in a competitor firm's product market is $656.7 million. Covenant violations occur in nearly 6% of the sample.

Summary statistics of loan and firm characteristics used in our market-based test are presented in Table 4. Average loan maturity (in months) and amount are consistent with prior studies (Murfin 2012; Hasan et al. 2014). All scaled variables are winsorized at the top and bottom 0.5%.[32]

4. EMPIRICAL RESULTS

4.1 Baseline Estimates of the Effect of the AJCA

Figure 3 shows graphical evidence on whether the economic performance of competing firms is negatively associated with their product market rivals' repatriation amounts. Specifically, Figure 3 plots the average level of cash flows for two groups: competing firms with their product market rivals' repatriation amounts ranked in the (1) top 3 deciles and (2) bottom 3 deciles. Decile rankings of product market rivals' repatriation amounts are constructed by ranking the total repatriation amounts (i.e., over the entire repatriation tax holiday years) in each competing firm's product market space. Figure 3 shows that the structural break in the average level of cash flows for the two groups occurs in year 2005, and this structural break coincides with the reduction in the repatriation tax burden. Although Figure 3 is informative, both competing firm level and macroeconomic factors can confound the interpretation of such graphical evidence.

To corroborate the descriptive evidence in Figure 3, Table 5 presents the results of estimating Eq. (2). Columns 1 and 2 examine whether and the extent to which AJCA repatriation amounts are related to the operating performance of competing firms. Operating performance is measured as cash flows, or earnings before interest, tax, depreciation, and amortization scaled by total assets at t-1. In columns 1 and 2, our independent variable of interest is the change in repatriation amounts in the competing firm's product market.

When we regress the change in cash flows on the lagged change in repatriation amounts in column 1, the β coefficient is -0.295 and significant at the $p<0.01$ level. The interpretation of the

[32] Our results are qualitatively unchanged when we winsorize all scaled variables at the top and bottom 1%.

negative coefficient is that the operating performance of competing firms is decreasing in firms' repatriation amounts. In column 2 we include control variables. Controlling for firm-level and product market space-level variables do not alter our inferences from column 1. Using the β point estimate in column 2, we estimate that for a one standard deviation change in firms' repatriation amounts, the average competitor firm's cash flows decline by 0.33% of its total assets, relative to other competitor firms that do not experience repatriation by their rivals in the same year. When we consider the mean level of cash flows prior to the enactment of AJCA, the economic significance is slightly larger; a 0.33% decline in cash flows represents 3.2% of mean cash flows. In short, the results provide evidence on the tax channel of competitive externalities. That is, the repatriation tax cut had a negative effect on competing firms' operating performance as the after-tax rate of return on engaging in competitive activities would have increased.

In columns 3, 4, and 5 of Table 5, we examine whether competing firms' financing constraints are more likely to be binding as their rivals' repatriation amounts increase. To do so, we examine three financial covenants that are most frequently used in debt contracts. Demerjian and Owens (2016) find that the current, net worth, and interest coverage ratios are widely used in their Dealscan loan contracts sample. Specifically, the current, net worth, and interest coverage ratios appear in 95.4%, 96.9%, and 76.3% of Dealscan contracts (Demerjian and Owens 2016).

We find that firms' repatriation amounts do not have an effect on their competitors' current or interest coverage ratios (i.e., the β coefficients are not statistically significant in columns 3 and 5). However, the β coefficient in column 4 explaining changes in net worth is statistically and economically significant. A one standard deviation increase in firms' repatriation amount in year t-1 reduces the competitor's net worth in year t by 0.004, which is 0.9% of the mean net worth in

our sample (i.e., stockholders' equity declines by 0.4% of its total assets). Thus, we find some evidence of an effect of firms' repatriation amounts on their competitors' financial covenants.

Are the negative externalities sufficient to trigger covenant violations? Our results in Table 6 shed further light on the association between the likelihood of competitors' binding financial constraints and product market rivals' repatriation amounts. Although we find in Table 5 that competitors' cash flows and stockholders' equity are decreasing in firms' repatriation amounts, in Table 6 we do not find an effect of firms' repatriation amounts on the likelihood of their competitors' financial covenant violations. Specifically, when we regress a covenant violation indicator on the lagged repatriation amount, we obtain an insignificant coefficient (see column 1 of Table 6). In column 2, we replicate Table 6 of Sufi (2009) to ensure that we have a well-specified model for explaining the likelihood of a financial covenant violation.[33] The signs on the coefficients of the independent variables in column 2 of our Table 6 are consistent with Sufi (2009). In column 3, we include firms' lagged repatriation amounts to Sufi's (2009) model. Column 3 indicates that firms' repatriation amounts do not have a significant effect on their competitors' likelihood of covenant violation. Our results in Table 6, in combination with the results in column 4 of Table 5, suggest that either the negative externalities not sufficiently large to trigger a financial covenant violation, or the competitor firms' lenders are relaxing the strictness of financial covenants in response to the repatriating firms' competitive activities.

4.2 The Role of Financing Constraints, Product Market Characteristics, and Repatriation

4.2.1 Financing Constraints

The theory of predation we use to motivate our tests suggests that any negative externalities of tax cuts should be concentrated in financially constrained competitors. Intuitively, shallow-

[33] We estimate a linear probability model (LPM) instead of logit model. Using LPM allows us to include firm fixed effects. Standard errors are clustered at the firm level and robust to heteroskedasticity.

pocket firms with limited access to external financing should be more exposed to competitive threats precisely because these firms have a limited ability to fend off rivals. To investigate whether the competitive externalities are concentrated in financially constrained competitor firms, we re-estimate Eq. (2) on sub-samples of constrained and unconstrained competitor firms. Three sorting measures are used to split firms into constrained and unconstrained groups: Faulkender and Petersen's (2012) measure of financial constraints; S&P domestic long-term issuer credit rating (also from Faulkender and Petersen 2012); and the Hadlock and Pierce Index. A firm is "constrained" if (1) it did not have sufficient cash flow to fund its capital expenditures for more than two years during 2000-2003 (Faulkender and Petersen measure); (2) it does not have a S&P domestic long-term issuer credit rating; or (3) it is ranked above the 50th percentile of Hadlock and Pierce (HP) Index in year 2003. A firm is considered "unconstrained" otherwise.

Using the competitors' change in cash flow as the dependent variable, Panel A of Table 7 shows that the negative effect of firms' repatriation amounts is concentrated in the financially constrained competitors. The β coefficients in Columns 1, 3, and 5 are statistically significant. The β coefficient of -0.321 in column 3 indicates that a one standard deviation increase in firms' repatriation amounts in year t-1 reduces the competitor's cash flow in year t by 0.39% of total assets (equivalent to $15 million). Compared to the mean level of cash flows of 10.3% prior to the enactment of AJCA, a 0.39% decline represents a decrease of 3.7% of cash flows. On the other hand, the β coefficients in Columns 2, 4, and 6 for unconstrained competitor firms is not statistically significant. Overall, our sub-sample tests using cash flows provide results consistent with the intuition competitive externalities of tax cuts should be concentrated in financially constrained firms.

4.2.2 Product Market Characteristics

Competitive activities such as price wars and targeted advertising campaigns are costly. Therefore, these activities should be more viable under product market conditions in which the beneficiaries of tax cuts can reap greater returns from engaging in competitive activities (Zingales 1998). Such conditions can include when a repatriating firm has greater market power (e.g., in a more concentrated industry) and has products more similar to its competitors.

To examine whether the competitive externalities we find vary across product market characteristics, we re-estimate Eq. (2) conditioning on modified HHI and total similarity score, as well as product market fluidity. HHI (i.e., market concentration) is commonly used as a proxy for market power, while the total similarity score is a global measure that captures the degree to which a firm faces competitive pressure from all other firms in a given year (Hoberg and Phillips 2016). Product market fluidity, constructed as the change in total similarity scores and capturing how much more similar products are becoming within a market, measures the degree to which a firm faces product market threats (Hoberg et al. 2014).[34]

In Table 8, columns 1, 3, and 5 in comparison to columns 2, 4, and 6 indicate that the competitive externalities of repatriation tax cuts are concentrated in competing firms operating in more concentrated markets and facing relatively higher competitive pressure. For example, the β coefficient of -0.442 in column 1 indicates that one standard deviation increase in firms' repatriation amounts in year t-1 in more concentrated markets reduces competitors' cash flows in year t by 0.53% of total assets (equivalent to $21 million). Overall, our results in Table 8 provide evidence consistent with the intuition that the negative competitive externalities of tax cuts are stronger when product markets are more concentrated and market threats are greater.

[34] The total similarity score and product market fluidity variables are available in Hoberg and Phillips' data library (http://hobergphillips.usc.edu).

4.2.3 Variation in Repatriation Amounts of Competitors

To examine whether competing firms that did not repatriate at all, or repatriated less, suffer more at the hands of rivals that repatriate, we re-estimate Eq. (2) using only those competitor firms that either did not repatriate foreign earnings, or repatriated relatively less foreign earnings (i.e., below median repatriation amounts measured across repatriating firms).[35] Columns 7 and 8 in Table 8 present our results. Our statistical and economic significance remain virtually unchanged for competitors that did not repatriate any foreign earnings or repatriated relatively less foreign earnings under the AJCA. In contrast, when we re-estimate Eq. (2) with competitors that repatriated relatively larger amounts of foreign earnings (i.e., above median repatriation amounts measured across repatriating firms), the β coefficient is insignificant. These results validate that the competitive externalities of the AJCA are concentrated in firms that did not directly benefit or benefited less from the repatriation tax cut.

4.3 Repatriating Firms' Payout Behavior and Financial Constraints

Prior research finds conflicting results on how firms used their repatriated funds. Notably, Blouin and Krull (2009) and Dharmapala et al. (2009) estimate that between 20% and 90% of firms' repatriated funds were distributed to shareholders while Faulkender and Petersen (2012) conclude instead that domestic capital expenditures increased, but only for financially constrained firms. We incorporate these insights to analyze how competing firms' operating performance varies with repatriating firms' payout behavior and financial constraints.

Table 9 reports results after re-estimating Eq. (2) on sample splits along repatriating firms' shareholder payouts over 2004-2006 (columns 1 and 2) and financial constraints (columns 3 to 8). Regarding payouts, we expect the negative externalities on competitors to be concentrated in

[35] Recall that our main empirical specification does not impose requirement on the repatriation amounts by competitor firms.

markets where repatriating firms have lower shareholder payouts, as more repatriated funds remain in the firm to use for competitive strategies against rivals, compared to markets where repatriating firms have higher payouts. Confirming our expectation, the negative β coefficient on repatriation amounts is statistically and economically significant in the low payout group (i.e., below-median payouts in column 1), but not in the high payout group (i.e., above-median payouts in column 2).

Columns 3 to 8 examine whether the competitive externalities are stronger in markets with less financially constrained repatriating firms, as more repatriated funds are available for competitive strategies, compared to markets with more financially constrained repatriating firms that use their funds for capital investment (Faulkender and Petersen 2012). Comparing columns 3, 5, and 7 to columns 4, 6, and 8, the competitive externalities are either concentrated in the "unconstrained" group or monotonically decreasing in repatriating firms' financial constraints, depending on the financial constraints measure we use. These results suggest that when repatriating firms are relatively unconstrained before AJCA, then the more they repatriate during the AJCA, the more their competitor firms' cash flows decrease. In all, these results validate that the negative externalities on competitor firms are present when more funds are available to repatriating firms for competitive actions.

4.4 Parallel Trends and Within Industry-Year Estimation

A key assumption behind our interpretation of the β coefficient is that, absent firms' repatriation amounts, the average change in performance for competitor firms that experience repatriation by their rivals vs. competitor firms that do not experience repatriation by their rivals would have been the same in the post-AJCA years (i.e., their performance would have followed parallel trends). We examine the plausibility of this assumption by ensuring that both groups'

economic performance followed parallel trends up to the treatment period (i.e., the period during which a competitor firm's rivals repatriated). To do so, we include lead and lag repatriation amounts to Eq. (2) and present our results in Table 10.

Column 1 of Table 10 uses the change in cash flows as the dependent variable. We continue to only find our negative results on the repatriation amount in period t-1. The lead (t+1) and contemporaneous (t) effects of firms' repatriation amounts are statistically insignificant, suggesting that the pre-trends of operating income for both repatriating and non-repatriating rival groups do not differ. The coefficient on repatriation amounts in period t-2 is also statistically insignificant, suggesting that repatriation amounts by a competitor firm's rivals do not have lagged effects. Overall, the results in column 1 support our parallel trends assumption.

In columns 2 and 3 of Table 10, we follow up on our discussion in sections 1 and 3.2 on empirical challenges by including industry-year fixed effects in Eq. (2) and controlling for the possible trend in our dependent variable. Focusing the robustness analyses on the change in cash flows, in column 2 we find that replacing year fixed effects with industry-year fixed effects does not alter our qualitative results obtained in Table 5. The β point estimate in column 2 suggests that a one standard deviation increase in firms' repatriation amounts in year t-1 reduces the competitor firms' cash flow in year t by 0.29% of its total assets, relative to other competitor firms that do not experience repatriation by their rivals in the same industry and year. In column 3, we control for the possible firm-specific trend in our dependent variable with firm fixed effects. Doing so does not change our conclusion that the AJCA produced negative externalities on competitor firms' operating performance. Lastly, we soak up both time-varying industry-level shocks and firm-specific trends in the dependent variable in column 4. The negative effect of firms' repatriations on competitor firms' cash flows remains.

4.5 Debt Market Tests

Table 11 presents the results of estimating Eq. (3). Columns 1 and 2 examine whether and the extent to which the externalities of repatriations are priced in competitor firms' incremental borrowing activities. When we first regress the log of loan spread at time t on firms' lagged repatriation amounts with borrower fixed effects, we find that the $\beta_{R,t-1}$ coefficient is statistically insignificant, suggesting that the manifested competitive externalities of the repatriation tax cut on competitor firms' cash flows in Table 5 is *not* priced by lenders.

However, if lenders expect greater future cash flow risk in their borrowers stemming from competitive strategies taken by repatriating product market rivals, then either the $\beta_{R,t+1}$ or $\beta_{R,t}$ coefficients should be positive and significant. In column 2, we find that the $\beta_{R,t}$ coefficient is statistically and economically significant. For a one standard deviation increase in firms' repatriation amounts, competitor firms face a 9.86 basis point increase in their borrowing costs. Given the mean sample loan amount and maturity are $531.3 million and four years, a 9.86 basis point increase in borrowing costs is equivalent to a $2.1 million increase in interest payments. Interestingly, lenders' pricing of the negative externalities of the AJCA appears anticipatory, or *prior* to the manifestation of an actual effect on competitor firms' cash flows. That is, lenders' pricing of the externality occurs in year t, or the same year as the repatriation by the borrowers' rivals, whereas the borrowers' cash flows decrease in the year after rivals' repatriation. Overall, our debt market tests in Table 11 lend further support to our main analyses in Table 5 and suggest that lenders foresee—and price—the competitive externalities from the tax channel.

5. CONCLUSION

This study seeks to understand whether and how selective corporate tax cuts affect the economic performance of firms that might not directly benefit from the tax cuts. Although

traditional economic models suggest a negative relation between corporate tax burdens and the level of corporate investment, these models are silent on how heterogeneous corporate tax relief could affect the economic performance of firms experiencing corporate tax relief to a lesser degree. If competitor firms experiencing little to no tax relief were challenged by their product market rivals who benefited from the tax relief, then selective tax relief could negatively affect the economic performance of those firms. In turn, this "tax channel" can create competitive externalities within product markets.

Using the repatriation tax holiday under the AJCA as our setting, we find that the operating performance of product market competitors is decreasing in rival firms' repatriation amounts, consistent with the idea that the repatriation tax cut increases the after-tax return from engaging in competitive activities that degrade competing firms' economic performance (Bolton and Scharfstein 1990). This effect is concentrated in competitor firms with financing constraints and facing more concentrated product market spaces, and in competitor firms that either did not repatriate, or repatriated relatively less foreign earnings under the AJCA. Our results are robust to purging unobservable time-varying industry-year fixed effects. Loan pricing tests suggest that lenders expect borrowers' future cash flow risk stemming from the competitive externalities of the repatriation tax cut.

Our study informs researchers and policymakers by identifying a negative competitive effect stemming from tax relief generally and repatriations specifically. We find that selective corporate tax relief can have potentially unintended economic consequences on repatriating firms' competitors as repatriating firms appear to engage in competitive strategies against their rivals. Our results suggest that these consequences are economically significant.

Despite this evidence, we provide four caveats regarding our findings. First, it is difficult to

pinpoint specific competitive activities, so the literature relies on providing evidence on competitive effects that are "consistent with" activities such as predation (see Bernard 2016 and Shroff 2016). Therefore, we rely on the variation in competing firms' economic performance as an imperfect, but powerful outcome measure of the competitive externalities of tax cuts. Second, although our results suggest a negative effect of the AJCA on the economic performance of repatriating firms' competitors, we cannot claim that all competitor firms experienced *no* benefit from the AJCA tax holiday. Some firms may have benefited through the increase in household consumption, which manifests in other areas or in different outcome measures. Third, we cannot definitively extrapolate our results to another setting where selective corporate tax relief is present. For example, policymakers and tax administrators providing guidance on the current U.S. tax reform law might design policies that limit the effects we document in our study. Fourth, we reserve judgment as to whether the short-run reduction in operating performance by competitors is sub-optimal. It is possible that competitors improved operations to increase their competitiveness against repatriating firms over the long-run. It is also possible that non-repatriating competitors were eventually purchased by their repatriating rivals, and thus made more efficient through a merger. Nevertheless, we take a first step to establish that tax cuts for certain firms appear to have at least short-term negative externalities on their competitors. We look forward to research that can isolate long-run effects as well.

Appendix A. Product Market Similarity Example[36]

	SIC	FYE 2003 10-K Product Descriptions
Peer firm: ADC Telecommunications, Inc. *(has 49 product market competitors)*	3661	Our *Broadband Infrastructure and Access* business **provides network infrastructure products** for wireline, cable and wireless communications network applications; Digital Subscriber Line (DSL) offerings for the telecommunications industry; and Internet Protocol (IP)-based offerings for the cable industry. These products consist of: connectivity systems and components that provide the infrastructure to wireline, cable and wireless service providers to connect to Internet, data, video and voice servces to the network over copper, coaxial and fiber-optic cables... Our *Integrated Solutions* business provides system integration services and operations support system (OSS) software for broadband, multiservice communications over wireline and wireless networks.
Competitor: Lucent Technologies Inc. *(with highest pairwise product similarity)*	3661	Lucent Technologies Inc. (referred to in this report as the "Company," "we," "us," "our" or "Lucent") **designs and delivers the systems, services and software that drive next-generation communications networks.** Backed by Bell Labs research and development, we rely on our strengths in mobility, optical, software, data and voice networking technologies, as well as services, to create new revenue-generating opportunities for our customers, while enabling them to quickly deploy and better manage their networks. Our customer base includes communications service providers, governments and enterprises worldwide.
Competitor: Hickory Tech Corporation *(with lowest pairwise product similarity)*	4813	HickoryTech's core business is its Telecom Sector, which consists of two businesses. One of these businesses is the operation of three incumbent local exchange carriers (ILECs). This business consists of **connecting customers to the telephone network, providing switched service and dedicated private lines, connecting customers to long distance service providers and providing many other services commonly associated with ILECs.** The second business of the Telecom Sector is competitive local exchange carrier (CLEC) services, which HickoryTech initiated in 1998, and its associated competitive businesses of long distance service and Internet access. This business leverages HickoryTech's expertise and expands its telecommunications service into areas served by other ILECs. In December of 2003, HickoryTech sold what had been a third business of the Telecom Sector, which provided wireless telecommunications services to customers in southern Minnesota and its surrounding area, along with an area surrounding Minneapolis/St. Paul. The wireless operations are reported as part of the Telecom Sector. All financial statements and schedules have been restated to reflect wireless operations as discontinued operations. In addition to the Telecom Sector, HickoryTech provides data processing services to the telecommunications industry (Information Solutions Sector) and provides telephone and data equipment sales and service as well as the sale, installation and ongoing service of voice over Internet Protocol equipment (Enterprise Solutions Sector).

[36] The total repatriation amount by ADC Telecommunication's product market competitors is $1.8 billion.

Appendix B. Keyword Search Examples

(*For three firms that had the highest amounts of repatriation*)

Repatriating firms	Source	Relevant paragraphs
Pfizer Inc.	10-Q	In the first nine months of 2005, we recorded an income tax charge of $1.7 billion, included in Provision for taxes on income, in connection with our decision to repatriate about $36.7 billion of foreign earnings in accordance with the American Jobs Creation Act of 2004 (the Jobs Act). In the first quarter of 2005, we recorded an initial estimated income tax charge of $2.2 billion based on the decision to repatriate $28.3 billion of foreign earnings; in the second quarter of 2005, we reduced our original estimate of the tax charge by $863 million and revised the repatriation of foreign earnings to $28.1 billion, principally as a result of guidance issued by the U.S. Treasury in May 2005. In the second quarter of 2005, we also recorded an additional tax charge of $373 million, primarily due to our decision to repatriate an additional $8.6 billion of foreign earnings. As of October 2, 2005, we intend to continue to permanently reinvest the earnings of our international subsidiaries and, therefore, we have not recorded a U.S. tax provision on the remaining amount of unremitted earnings.
Merck Sharp & Dohme Corp.	10-K	The American Jobs Creation Act ("AJCA"), signed into law in October 2004, created temporary incentives through December 31, 2005 for U.S. multinationals to repatriate accumulated income earned outside of the United States as of December 31, 2002. In connection with the AJCA, the Company repatriated $15.9 billion during 2005, and as a result, recorded an income tax charge of $766.5 million. This charge was partially offset by a $100 million benefit associated with the decision to implement certain tax planning strategies.
HP Inc.	10-K	The increase in the overall tax rate in fiscal 2005 from fiscal 2004 is related primarily to tax expense associated with the repatriation of $14.5 billion under the provisions of the American Jobs Creation Act of 2004 (the "Jobs Act"), which was partially offset by the increase in the tax benefit derived from lower rates in other jurisdictions. The increase in the overall tax rate in fiscal 2004 from fiscal 2003 was the result primarily of a decline in the tax benefit from lower rates in other jurisdictions in fiscal 2004.

Appendix C. Variable Definitions

Annual and Quarterly Compustat Variables

Repatriation in a competitor firm's product market = the sum of total yearly repatriation amounts from 2002 to year t scaled by beginning-of-year total assets (AT) measured in year that a competitor firm first experiences repatriation by its rivals. For example, if the amount of repatriation in a competitor firm's product market first appears in 2004, then total assets are measured at the beginning of year 2004. This measure is first-differenced and scaled by 1,000 in all regression-based analyses.

Cash flow = earnings before interest, tax, depreciation, and amortization (EBITDA) divided by lagged total assets (AT)

Current Ratio = current assets (ACT) divided by current liabilities (LCT)

Net Worth = (total assets (AT) minus total liabilities (LT)) divided by total assets (AT)

Interest Coverage = interest expense (XINT) divided by operating income before depreciation (OIBDP)

Cash = cash and short-term investments (CHE) divided by total assets (AT)

Leverage = (current liabilities (DLC) plus long-term debt (DLTT)) divided by total assets (AT)

Size = natural log of size (AT)

Tangibility = property, plant, and equipment (PPENT) divided by total assets (AT)

Market-to-Book = (total assets (AT) minus (total assets (AT) minus total liabilities (LT) plus deferred taxes and investment tax credit (TXDITC)) plus (closing price (PRCC_F) multiplied by common shares outstanding (CSHO)) divided by total assets (AT)

NOL Indicator = 1 if tax loss carryforward > 0; 0 otherwise

Repatriation = hand-collected repatriation amount from 10-K, 10-Q, and 8-K divided by total assets (AT)t-1

Cash held by competing firm's product market rivals = product-similarity-score weighted average of cash held by competing firm's product market rivals. For example, if a competing firm has three product market rivals with product similarity weights of 0.3, 0.25, and 0.45 and with cash (CHE) equal to $0, $100 million, and $100 million in year t, then the similarity-weighted average of cash held by product market rivals is $70 million in year t.

Tangible Net Worth = total assets (AT) minus total liabilities (LT) minus intangible assets (INTAN)

Debt-to-Tangible Net Worth = (current liabilities (DLC) plus long-term debt (DLTT)) divided by tangible net worth

Fixed Charge Coverage = operating income before depreciation (OIBDP) divided by (interest expense (XINT) plus current liabilities (DLC))

Z-score = 3.3(pretax income (PI) divided by total assets (AT)) plus (sales (SALE) divided by total assets (AT)) plus 1.4(retained earnings (RE) divided by total assets (AT)) plus 1.2((current assets (ACT) minus current liabilities (LCT)) divided by total assets (AT)) plus 0.6(closing price (PRCC_F) multiplied by common shares outstanding (CSHO) divided by total liabilities (LT))

Text-Based Network Industry Classification (TNIC) Sales Volatility = Using Compustat quarterly data, we construct a firm-year product market sales volatility measure. Specifically, we calculate the standard deviation of the quarterly differences in sales and scale the sd(sales) by average total assets over the year. To get the product market sales volatility measure, we obtain the median sd(sales)/average total assets.

Modified Herfindahl-Hirschman Index (mHHI) = mHHI follows the standard HHI definition: the sum of the squared percentage of sales by each firm in a given product market space/product market group.

Faulkender & Petersen (2012) financial constraints measure = For years between 2000- 2003, number of years for which a firm did not have sufficient cash flow to fund its capital expenditures/4. Essentially, this variable is bounded by [0, 1]. Following Faulkender & Petersen (2012), cash flow/operating income is defined as earnings after taxes but prior to interest expense.

Credit rating = 1 if Standard & Poor's (S&P) domestic long-term issuer credit rating (splticrm) exists; 0 otherwise.

Hadlock & Pierce Index (HP Index) = -0.737(size) plus 0.043(size)^2 minus 0.040(age), where size equals the log of total assets (AT) in 2004 dollars and age is the number of years the firm is listed with non-missing stock price until year 2003. Following Hadlock and Pierce (2010), size is capped at log of $4.5 billion, and age is capped at 37 years. To create the HP Index, firms are sorted into deciles based on the index values in year 2003.

Dealscan Variables (At Loan-Package Level)

Maturity = the maximum of the maturity of loan-facilities (i.e., loan tranches that make up a loan package) in months

Loan Amount = the stated total amount of loan package

Secured = 1 if loan package is secured; 0 otherwise

Spread = the rate that a borrower pays over LIBOR for each dollar drawn (in basis points)

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Figure 1. This figure illustrates the concept of firm- (or node-) centric product market rivals and space, and how we set up our empirical design. In our empirical design, the extent to which product market rivals benefit from the reduction in repatriation tax burden is proxied by repatriation amount. For a competing firm facing product market rivals that receive benefit from the repatriation tax holiday and, therefore, repatriate, we predict that the competitive externalities of repatriation tax cut will manifest itself as negative economic performance of the competing firm. Since each competing firm has its own product market rivals/space, repatriation amount by each product market rival is aggregated in each product market space and is unique to each competing firm. In addition, competing firms i and j can share product market rival(s) (e.g., Rival 4) but competing firms i and j do not have a completely overlapping set of product market rivals (again, each competing firm has its own product market rivals/space). To test our hypothesis, we examine the difference in the changes in economic performance for competing firms i and j.

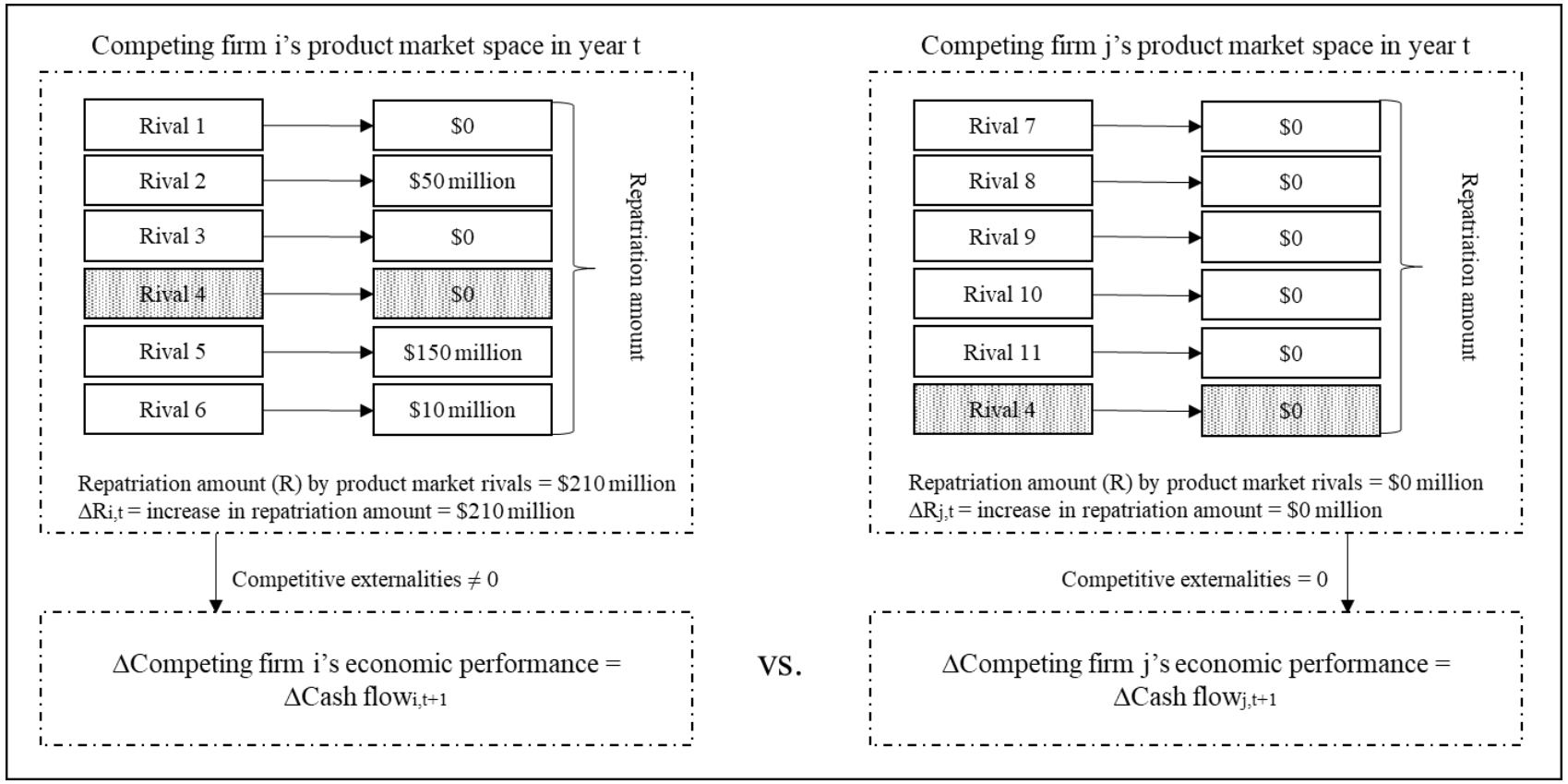

Figure 2. The time-series plot of the average number of product market competitors faced by firms. This figure plots the average number of product market competitors faced by different group of firms: the average number of competitors faced by (1) repatriating and (2) all the other firms. The number of product market competitors are obtained from Hoberg and Phillip's (2016) Text-based Network Industry Classification.

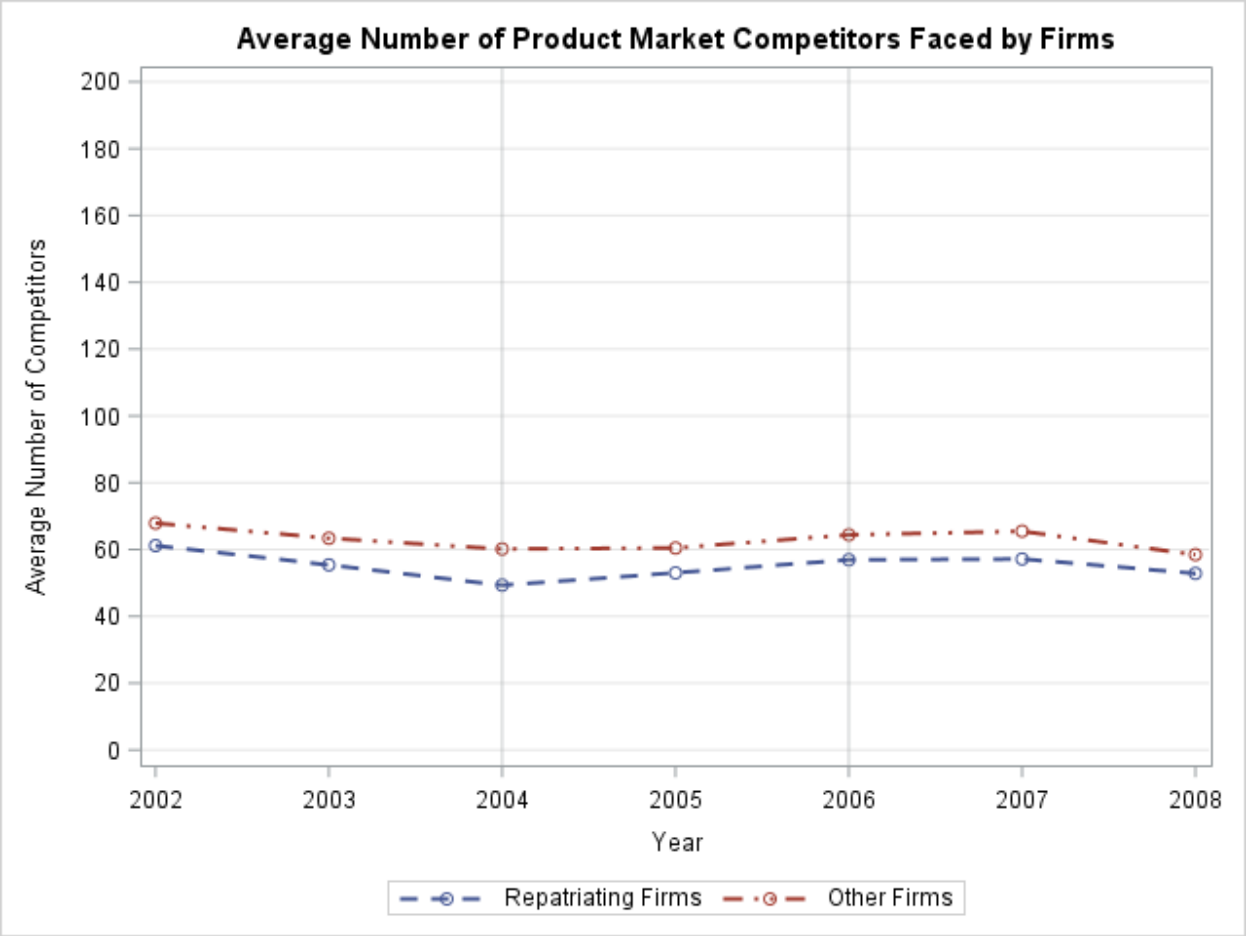

Figure 3. The time-series plot of the average level of cash flows for different group of competing firms: the average level of cash flows for (1) group of competing firms with their product market rivals' repatriation amounts ranked in the top 3 deciles and (2) group of competing firms with their product market rivals' repatriation amounts ranked in the bottom 3 deciles. Decile rankings of product market rivals' repatriation amounts are constructed by ranking the total repatriation amounts (i.e., over the entire repatriation tax holiday years) in each competing firm's product market space.

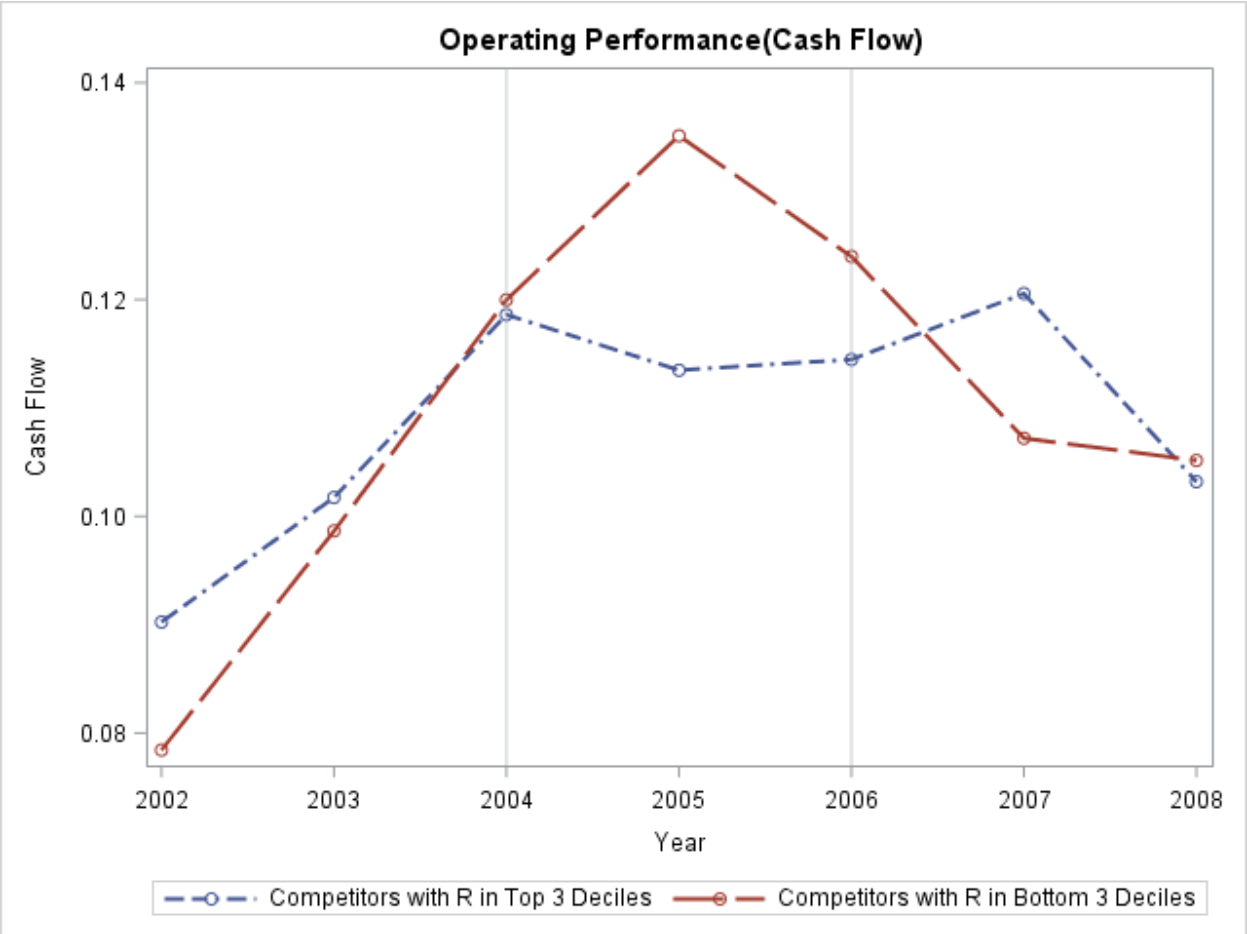

Table 1. Repatriations Under the AJCA (The American Jobs Creation Act of 2004).
Notes. Panel A presents the number of repatriators and total repatriation amounts across four different studies that have hand-collected the repatriation amounts under the AJCA. Studies that have hand-collected the repatriation amounts under the AJCA compare their total amount to Redmiles' (2008) total repatriation amounts. Redmiles (2008) uses information on Form 8895 and Statistics of Income corporate return sample for tax years 2004-2006. Panel B shows repatriation amounts over the repatriation tax holiday years (i.e., 2004-2006).

Panel A: Hand-collected repatriation amounts	This Paper	Faulkender & Petersen (2012)	Blouin & Krull (2009)	Redmiles (2008)
Number of firms discussing the AJCA	1,339	1,246	-	-
Number of firms repatriating foreign earnings	443	442	455	843
Number of repatriators disclosing the amount	423	423	-	-
Total repatriation amounts	$ 305 billion	$ 298 billion	$ 310 billion	$ 312 billion
Data source	10-K, 10-Q, & 8-K	10-K	Lexis Nexis & 10-K	IRS SOI
Panel B: Repatriation amounts from years 2004 to 2006				
	2004	2005	2006	
Total repatriation amounts	$ 7.51 billion	$ 275.46 billion	$ 22.52 billion	

Table 2. Three-digit SIC Industry Composition (in $billions).
Notes. This table presents three-digit SIC industries that have repatriated at least $3 billion. The second column presents the total repatriation amounts (in $billions). The third column presents the number of firms in each three-digit SIC industry that repatriated foreign earnings under the AJCA. The fourth and fifth columns are obtained from Faulkender and Petersen's (2012) Table 2. The difference in total repatriation amounts by three-digit SIC industries between this paper and Faulkender and Petersen (2012) is negligible.

Industry	This paper		Faulkender & Petersen	
	Total Repatriation Amounts	Number of Firms	Total Repatriation Amounts	Number of Firms
283-Drugs	104.589	27	104.516	26
357-Computer and Data processing	26.722	18	27.699	17
737-Computer Programming, Data Processing and Other Computer Related	19.625	30	19.167	30
208-Beverages	15.573	5	15.698	6
367-Electronic Components and Accessories	13.569	27	12.586	25
282-Plastics Materials and Synthetic-Resins, -Rubber, Cellulo	12.061	6	9.904	6
284-Soap, Detergents, and Cleaning preparations; Cosmetics	8.497	6	8.831	8
384-Surgical, Medical, and Dental Instruments and Supplies	7.922	19	6.533	17
366-Communications Equipment	6.120	7	5.862	6
211-Cigarettes	6.076	2	6.076	2
621-Security Brokers, Dealers, and Flotation Companies	5.822	4	-	-
131-Crude Petroleum and Natural Gas	5.146	12	-	-
371-Motor Vehicles and Motor Vehicle Equipment	3.549	6	-	-
581-Eating and Drinking Places	3.500	2	-	-
999-Nonclassifiable Establishments	3.400	2	-	-
619-Other Telecommunications Activities	3.200	1	-	-
382-Laboratory Apparatus and Analytical and Optical Devices	3.088	17	-	-
394-Dolls, Toys, Games and Sporting and Athletic Goods	3.061	4	-	-

Table 3. Summary Statistics.

Notes. Panel A shows the number of treatment frequency for 3,302 firms in our sample. The number of treatment frequency equals the number of times that each competitor firm experienced repatriation by its product market rival(s). Panel B shows the presence of variation in the timing of the treatment across treated firms. Just the first treatment year for treated competitor firms is used to produce summary statistics in Panel B. Panel C presents summary statistics for 15,880 firm-year observations over the sample period 2002-2008 used in this paper's analyses. To obtain our sample for summary statistics, financial firms (6,000<=SIC<=6,999) and firms with missing data on cash flow are eliminated. In addition, very small firms (i.e., those firms with the value of capital stock (*PPENT*) < $5 million) and firms suspected to have undergone mergers or reorganizations (i.e., those firms with sales growth > 100%) are eliminated. Since this paper's analyses rely on Hoberg and Phillips's (2016) Text-based Network Industry Classification (TNIC) and Nini, Smith, and Sufi's (2012) covenant violation data, the final sample is an intersection of the above two studies' samples. All scaled variables are winsorized at the top and bottom 0.5%. All variables are defined in Appendix C.

Panel A		
Number of treatment frequency	Number of firms	Percent
0	1,345	40.73%
1	901	27.29%
>=2	1,056	31.98%
Total	3,302	100.00%
Panel B		
Year of first treatment	Number of firms	Percent
2004	756	38.63%
2005	1,141	58.30%
2006	60	3.07%
Total	1,957	100.00%

Panel C	Summary statistics					Before repatriation tax holiday	
	Mean	St. Dev.	25th	Median	75th	Mean	St. Dev.
Covenant violation variable							
Violation of covenant {0,1}	0.059	0.236	0.000	0.000	0.000	0.076	0.265
Repatriation variable (raw)							
Repatriation (in $millions)	14.657	390.240	0.000	0.000	0.000		
Repat in competitor's product market (in $millions)	656.701	4812.285	0.000	0.000	0.000		
Repatriation variable (used in analyses)							
ΔRepat in competitor's product market	0.002	0.012	0.000	0.000	0.000		
Firm characteristics							
Cash flow	0.117	0.144	0.066	0.123	0.188	0.103	0.140
Leverage	0.234	0.220	0.040	0.202	0.351	0.240	0.220
Current ratio	2.512	2.133	1.268	1.888	2.942	2.590	2.338
Networth	0.480	0.262	0.327	0.495	0.672	0.484	0.266
Interest coverage	0.132	0.531	0.011	0.081	0.210	0.145	0.607
Cash	0.162	0.185	0.025	0.087	0.238	0.167	0.195
Size	6.409	1.794	5.103	6.265	7.576	6.136	1.775
Size (in $millions)	3975.215	20043.928	164.499	526.071	1951.403	3259.918	18530.573
Tangibility	0.302	0.234	0.114	0.232	0.444	0.318	0.234
Market-to-book	1.766	1.088	1.084	1.422	2.062	1.659	1.076
TNIC HHI	0.233	0.191	0.096	0.166	0.304	0.227	0.195
Cash held by competing firm's rivals	0.198	0.171	0.069	0.127	0.313	0.199	0.173
Peer sales volatility	0.028	0.024	0.013	0.019	0.034	0.028	0.024

Table 4. Dealscan-Compustat Summary Statistics.
Notes. This table presents summary statistics for 4,833 loan-year observations over the sample period 2002-2008 used in this paper's analyses. Specifically, summary statistics are at the loan-package level, not at the loan-facility level (i.e., loan tranches that make up a loan package). To obtain our summary statistics for loan-year sample, financial firms (6,000<=SIC<=6,999) are eliminated. In addition, very small firms (i.e., those firms with the value of capital stock (*PPENT*) < $5 million) and firms suspected to have undergone mergers or reorganizations (i.e., those firms with sales growth > 100%) are eliminated. Firms with missing data on Hoberg and Phillip's (2016) Text-based Network Industry Classification and Nini, Smith, and Sufi's (2012) covenant violation are eliminated. Thus, the final sample is an intersection of the above two studies' samples. All scaled variables are winsorized at the top and bottom 0.5%. All variables are defined in Appendix C.

	Full loan-year sample				
	Mean	St. Dev.	25th	Median	75th
Repatriation variable (used in analyses)					
Repat in competitor's product market	0.001	0.003	0.000	0.000	0.000
Loan characteristics					
Maturity (in months)	48.909	22.565	36.000	59.000	60.000
Amount (in $millions)	531.294	1383.550	75.000	200.000	500.000
Secured	0.681	0.466	0.000	1.000	1.000
Spread (in basis points)	210.542	169.571	87.500	175.000	275.000
Firm characteristics					
Tangible net worth (in $millions)	426.280	2255.040	-2.414	104.563	481.544
Debt-to-tangible net worth	0.710	9.981	-0.294	0.486	1.468
Current ratio	1.801	1.073	1.111	1.547	2.180
Fixed charge coverage	10.172	34.824	1.142	2.588	6.328
Z-score	2.760	2.675	1.293	2.469	3.929
Cash	0.086	0.108	0.016	0.045	0.113
Leverage	0.309	0.213	0.163	0.285	0.412
Market-to-book	1.593	0.832	1.067	1.346	1.858

Table 5. The Effect of Repatriation Amounts on Competitor Firm's Economic Performance and Financial Covenant Variables.

Notes. This table presents results of estimating first-differenced equation (2). The dependent variable for columns 1-2 is ΔCash Flow*t*. It is the first-differenced variable of earnings before interest, tax, depreciation, and amortization scaled by beginning-of-year total assets. Dependent variables in columns 3-5 are ΔCurrent Ratio*t*, ΔNetworth*t*, and ΔInterest Coverage Ratio*t*. ΔCurrent Ratio*t* is current assets divided current liabilities. ΔNetworth*t* is total assets minus total liabilities divided by total assets. ΔInterest Coverage Ratio*t* is interest expense divided by operating income before depreciation. In each specification, dependent variables are regressed on ΔRepat in competitor's product market*t-1* and control variables. Appendix C provides variable definitions. The unit of analysis is competing firm-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. All specifications include year fixed effects. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent Variable	ΔCash Flow *t*		ΔCurrent Ratio *t*	ΔNetworth *t*	ΔInterest Coverage Ratio *t*
	(1)	(2)	(3)	(4)	(5)
ΔRepat in competitor's product market *t-1*	-0.295***	-0.271**	-0.905	-0.373***	-0.175
	(0.103)	(0.108)	(1.780)	(0.142)	(0.329)
ΔCash *t-1*		0.000	-1.335***	0.000	0.036
		(0.012)	(0.182)	(0.014)	(0.113)
ΔSize *t-1*		-0.072***	-0.068	0.022***	0.026
		(0.005)	(0.051)	(0.005)	(0.039)
ΔMarket-to-book *t-1*		0.003**	0.152***	0.012***	0.002
		(0.002)	(0.020)	(0.001)	(0.007)
ΔLeverage *t-1*		-0.018	-0.775***	-0.056***	0.277**
		(0.011)	(0.138)	(0.018)	(0.117)
ΔPeer sales		-0.109**	-0.449	0.096	-0.798
volatility *t-1*		(0.054)	(0.578)	(0.060)	(0.910)
ΔmHHI *t-1*		0.008	0.038	-0.005	-0.047
		(0.005)	(0.067	(0.006)	(0.072)
ΔRepatriation *t-1*		-0.038	-0.244	0.054	0.442
		(0.030)	(0.526)	(0.056)	(0.483)
ΔNOL *t-1*		0.001	-0.023	-0.004	0.014
		(0.002)	(0.034)	(0.003)	(0.031)
ΔCash held by rivals *t-1*		0.020	0.179	0.025	-0.034
		(0.014)	(0.190)	(0.017)	(0.199)
Year FE	Y	Y	Y	Y	Y
Number of observations	15,880	15,880	15,536	15,880	14,632
Number of firms	3,177	3,177	3,119	3,177	3,035
R^2	.010	.072	.025	.023	.002

Table 6. The Effect of Repatriation Amounts on Competitor Firm's Covenant Violation.

Notes. This table presents covenant violation regressions. The dependent variable is covenant violation indicator obtained from Nini, Smith, and Sufi's (2012) data available on Amir Sufi's website. In columns 1 and 3, covenant violation indicator is regressed on Repat in competitor's product market*t-1* (with the addition of control variables in column 3). Repat in competitor's product market*t-1* variable is the sum of repatriation amounts of firms located in a competitor's product market in a given year scaled by total assets measured at the beginning of the first year of repatriation. Appendix C provides variable definitions. The unit of analysis is competing firm-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. All specifications include firm and year fixed effects. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Covenant Violation *t* {0,1}		
	(1)	(2)	(3)
Repat in competitor's product market *t-1*	-0.060		-0.201
	(0.231)		(0.231)
Cash flow *t*		-0.262***	-0.262***
		(0.037)	(0.038)
Leverage *t*		0.053	0.043
		(0.049)	(0.050)
Networth *t*		-0.008	-0.021
		(0.044)	(0.046)
Current ratio *t*		-0.004**	-0.004**
		(0.002)	(0.002)
Market-to-book *t*		-0.004	-0.003
		(0.003)	(0.003)
Size *t*		0.036***	0.036***
		(0.008)	(0.008)
Peer Sales			-0.094
Volatility *t*			(0.227)
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
Number of observations	15,880	15,325	15,211
Number of firms	3,177	3,110	3,102
R^2	.045	.055	.056

Table 7. Financial Constraints.

Notes. This table presents results of estimating first-differenced equation (2) conditioning on financial constraints. Three different sorting measures are used to split firms into (1) constrained group and (2) unconstrained group. Specifically, Faulkender and Petersen's (2012) measure of financial constraints, S&P domestic long-term issuer credit rating, and Hadlock and Pierce Index are used as proxies for financial constraints. A competing firm is "Constrained" if (1) it did not have sufficient cash flow to fund its capital expenditures for more than two years during 2000-2003 period, (2) it does not have S&P domestic long-term issuer credit rating, and (3) it is ranked above the 50th percentile of Hadlock and Pierce (HP) Index in year 2003. A competing firm is considered "Unconstrained" otherwise. The dependent variable in Panel A is ΔCash flow*t*. The dependent variable in Panel B is ΔNetworth*t*. In each specification, dependent variables are regressed on ΔRepat in competitor's product market*t-1* and control variables. Appendix C provides variable definitions. The unit of analysis is competing firm-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. All specifications include year fixed effects. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A	ΔCash Flow *t*		ΔCash Flow *t*		ΔCash Flow *t*	
	Faulkender & Petersen measure		S&P credit rating		Hadlock & Pierce Index	
	Constrained	Unconstrained	Not rated	Rated	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
ΔRepat in competitor's product market *t -1*	-0.371***	-0.118	-0.262***	0.266	-0.321***	0.032
	(0.098)	(0.098)	(0.076)	(0.223)	(0.093)	(0.126)
Number of observations	5,918	7,591	10,566	5,314	7,040	7,166
Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Panel B	ΔNetworth *t*		ΔNetworth *t*		ΔNetworth *t*	
	Faulkender & Petersen measure		S&P credit rating		Hadlock & Pierce Index	
	Constrained	Unconstrained	Not rated	Rated	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
ΔRepat in competitor's product market *t -1*	-0.423***	-0.126	-0.349**	-0.450	-0.400***	-0.280
	(0.126)	(0.152)	(0.149)	(0.411)	(0.119)	(0.193)
Number of observations	5,918	7,591	10,566	5,314	7,040	7,116
Controls	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y

Table 8. Herfindahl-Hirschman Index, Total Similarity, Product Market Fluidity, and Repatriation Effects.

Notes. This table presents results of estimating first-differenced equation (2) conditioning on Herfindahl-Hirschman Index, total similarity score, and product market fluidity. Herfindahl-Hirschman Index (HHI) is modified to fit the Text-Based Network Industry Classification. This modified HHI captures market concentration and is a common proxy for market power. As defined in Hoberg and Phillips (2016), total similarity score captures the degree to which a focal firm (i.e., a competitor firm in our sample) faces competitive pressures from all other firms in a given year. Product market fluidity, defined in Hoberg, Phillips, and Prabhala (2014), captures the degree to which a focal firm (i.e., a competitor firm in our sample) is facing ex ante product market threats. A competing firm is in "High mHHI" group if its modified HHI is above the 50th percentile of the modified HHI measure in year 2003 and in "Low mHHI" group otherwise. A competing firm is in "High Total Similarity" group if its total similarity score is above the 50th percentile of the total similarity score in year 2003. A competing firm is in "Low Total Similarity" group if its total similarity score is below the 50th percentile of the total similarity score in year 2003. Similarly, a competing firm is in "High Product Market Fluidity" group if its fluidity measure is above the 50th percentile of the fluidity measure in year 2003 and in "Low Product Market Fluidity" group if its fluidity measure is below the 50th percentile of the fluidity measure in year 2003. A competing firm falls in the Repat<50th group if its repatriation amounts under the AJCA is either 0 or below the median repatriation amount. A competing firm is in the Repat>50th group otherwise. The dependent variable in columns 1-8 is ΔCash Flow*t*. In each specification, the dependent variable is regressed on ΔRepat in competitor's product market*t-1* and control variables. Appendix C provides variable definitions. The unit of analysis is competing firm-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. All specifications include year fixed effects. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	ΔCash Flow *t*		ΔCash Flow *t*		ΔCash Flow *t*		ΔCash Flow *t*	
	High mHHI	Low mHHI	High Product Market Fluidity	Low Product Market Fluidity	High Total Similarity	Low Total Similarity	Repat<50th	Repat>50th
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔRepat in competitor's product market *t-1*	-0.442***	0.119	-0.249***	-0.029	-0.306***	-0.010	-0.277**	0.257
	(0.091)	(0.117)	(0.088)	(0.134)	(0.085)	(0.184)	(0.066)	(0.386)
Number of observations	8,810	5,354	6,675	7,623	6,392	7,558	14,833	1,047
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y

Table 9. Repatriating Product Market Rivals' Payout Behavior and Financial Constraints.

Notes. This table presents results of estimating first-differenced equation (2) conditioning on change in payout (i.e., payout=dividend and repurchases) over 2004-2006 by repatriating firms and repatriating firms' financial constraints. A competing firm is in "High Payout" group if the sum of the change in payout for repatriators located in its product market space over the years 2004-2006 is above the 50th percentile relative to the sum of the change in payout for repatriators located in other product market spaces. A competing firm is in "Low Payout" group otherwise. A competing firm is in "Constrained" group if (1) the average Faulkender and Petersen's (2012) measure of financial constraints for repatriators in the competing firm's product market space is ranked above the 50th percentile relative to the average Faulkender and Petersen's (2012) measure of financial constraints for repatriators in other product market spaces, (2) the average S&P credit rating for repatriators in the competing firm's product market space is ranked below the 50th percentile relative to the average S&P credit rating for repatriators in other product market spaces, and (3) the average Hadlock and Pierce Index for repatriators in the competing firm's product market space is ranked above the 50th percentile relative to the average Hadlock and Pierce Index for repatriators in other product market spaces. Otherwise, a competing firm is in "Unconstrained" group. The dependent variable in columns 1-8 is ΔCash Flow*t*. In each specification, the dependent variable is regressed on ΔRepat in competitor's product market*t-1* and control variables. Appendix C provides variable definitions. The unit of analysis is competing firm-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. All specifications include year fixed effects. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	ΔCash Flow *t*		ΔCash Flow *t*		ΔCash Flow *t*		ΔCash Flow *t*	
	Change in payout over 2004-2006		Faulkender & Petersen measure		S&P credit rating		Hadlock & Pierce Index	
	High Payout	Low Payout	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔRepat in competitor's product market *t-1*	-0.177	-0.436***	-0.088	-0.403***	-0.252**	-0.333***	-0.230**	-0.362***
	(0.128)	(0.097)	(0.109)	(0.135)	(0.105)	(0.088)	(0.096)	(0.094)
Number of observations	6,098	6,120	7,074	4,978	5,580	6,490	6,652	5,418
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y

Table 10. Parallel Trends and Robustness.

Notes. This table presents results of (1) testing the validity of parallel trends assumption, (2) controlling for time-varying two-digit SIC industry level shocks, and (3) controlling for firm-specific trend in ΔCash Flow*t*. In addition, column 4's specification soaks up both time-varying industry level shocks and firm-specific trend in the dependent variable. Appendix C provides variable definitions. The unit of analysis is competing firm-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	ΔCash Flow *t*			
	Parallel Trends	Within Industry-Year	Controlling for Firm-Specific Trend	Industry-Year and Firm FEs
	(1)	(2)	(3)	(4)
ΔRepat in competitor's product market *t+1*	-0.179			
	(0.117)			
ΔRepat in competitor's product market *t*	-0.088			
	(0.110)			
ΔRepat in competitor's product market *t-1*	-0.271**	-0.240**	-0.265**	-0.229*
	(0.115)	(0.113)	(0.132)	(0.131)
ΔRepat in competitor's product market *t-2*	-0.025			
	(0.133)			
Controls	Y	Y	Y	Y
Firm FE	N	N	Y	Y
Year FE	Y	N	Y	N
Industry-year FE	N	Y	N	Y
Number of observations	15,880	15,880	15,880	15,880
Number of firms	3,177	3,177	3,177	3,177
R^2	.073	.138	.072	.082

Table 11. The Effect of Repatriation Amounts on Competitor Firm's Loan Cost.

Notes. This table presents results of estimating equation (3). The dependent variable is log of all-in-drawn spread (i.e., the rate that a borrower pays over LIBOR for each dollar drawn). In column 1, log(Spread$_t$) is regressed on Repat in competitor's product market$_{t-1}$, borrower characteristics, and loan characteristics. Repat in competitor's product market$_{t-1}$ variable is the sum of repatriation amounts of firms located in a competitor's product market in a given year scaled by total assets measured at the beginning of the first year of repatriation. Borrower characteristic controls are: log(tangible net worth$_{t-1}$), current ratio$_{t-1}$, debt-to-tangible net worth$_{t-1}$, fixed charge coverage$_{t-1}$, and z-score$_{t-1}$. Loan characteristic controls are: log(loan amount$_t$), log(maturity$_t$), secured indicator$_t$, and loan type$_t$. Column 2 examines the lead and lag effects of Repat in competitor's product market. All specifications include borrower fixed effects and loan-year dummies. Appendix C provides variable definitions. The unit of analysis is loan-year. Standard errors are clustered at the firm level and are robust to heteroskedasticity. The sample period is from 2002 to 2008. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Log(Spread t)	
	(1)	(2)
Repat in competitor's product market *t+1*		-1.303
		(3.008)
Repat in competitor's product market *t*		15.612**
		(6.461)
Repat in competitor's product market *t-1*	7.880	9.040
	(5.851)	(5.780)
Repat in competitor's product market *t-2*		9.747
		(8.827)
Borrower characteristic controls *t-1*	Y	Y
Loan characteristic controls *t*	Y	Y
Borrower FE	Y	Y
Loan year dummies	Y	Y
Loan type dummies	Y	Y
Number of observations	3,592	3,592
Number of firms	1,637	1,637
R^2	.748	.750