Entry and capital structure mimicking in concentrated markets: the role of incumbents' financial disclosures[*]

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ABSTRACT

We examine whether the public availability of product market incumbents' financial disclosures leads to greater capital structure mimicking of incumbents by entrants. Exploiting a change in disclosure enforcement for German private firms in the mid-2000s, we find entrant-incumbent mimicking rises substantially in concentrated markets once incumbents' financial statements are publicly available. A series of falsification, cross-sectional, and additional tests reinforces our interpretation of the results. Our findings shed light on the effects of competitor financial statement disclosure on private firms' initial financing decisions and highlight how capital structure dependencies among peer firms arise.

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1. Introduction

De novo product market entrants set initial financing policies under uncertainty. Entrants have less information than incumbents about inputs to financing policies, such as the variability of market demand and operating costs, the characteristics of growth opportunities, and working capital needs (e.g., Caves, 1998). These information asymmetries make it difficult for entrants to weigh competitive and contracting costs of more debt financing against expected tax savings and other benefits, including reductions in owners' equity risk (e.g., Robb and Robinson, 2014). The consequence can be a financing mix ill-suited to the firm's needs and competitive environment, a handicap insofar as initial financing policies are difficult to adjust after entry and partly determine outcomes such as growth and survival (e.g., Hanssens et al., 2016; Brav, 2009).

We examine the effects of public disclosure of private incumbents' financing characteristics on entrants' initial financing policies. Although private firm financial disclosure requirements are common around the world (e.g., Badertscher et al., 2013), their relevance for entrants' initial financing decisions is largely unexplored. We expect that incumbents' financial information is useful to entrants as it reveals actual financing decisions and other characteristics that partly determine these decisions. While incumbents' financing constraints and investment opportunity sets likely differ from entrants' in some respects, incumbents' financial disclosures still offer a reasonable guide to industry conditions, growth expectations, and other factors. Alternative information sources such as third-party industry reports could also guide entrants, but these sources are often costly to acquire and few offer complete and reliable information on private firms' financial structure.[1]

[1] For example, Asker and Ljungqvist (2010) show that firms avoid sharing banks with rivals to minimize the risk their banks reveal confidential information. Their findings suggest learning about other firms' financial structure by inquiring creditors is generally not feasible. Along these lines, Minnis and Shroff (2017) survey European small- and medium-sized enterprises (SMEs) and find that information about leverage is often viewed as proprietary.

We predict that the usefulness of incumbents' financial information for entrants results in capital structure mimicking that is conditional on the structure of the product market. Consistent with models of learning (e.g., Devenow and Welch, 1996), entrants and their capital providers such as banks can use incumbents' information to minimize the risk of entering excessively over- or under-levered. As a result, entrants' financing decisions become more sensitive to incumbents' even though size and other differences mean that entrants are unlikely to use incumbent decisions as a target per se. This sensitivity is conditional, as the costs of misestimating an appropriate initial capital structure and the costs of acquiring information hinge on market structure. In concentrated product markets, firm-specific signals are highly informative (Hoberg and Phillips, 2010) and costs of deviating from industry financing norms are substantial (e.g., Chevalier, 1995; Opler and Titman, 1994). These costs plausibly include the effects of strategic debt interactions, which could account for lower dispersion of leverage in concentrated markets (MacKay and Phillips, 2005). Thus, we predict that, in concentrated markets, the availability of incumbent disclosures increases the sensitivity of entrants' initial financing decisions to incumbents' financing decisions—i.e., capital structure mimicking.

Our empirical analyses exploit the unique disclosure environment for private limited liability firms in Germany in the late-2000s. Like most other European countries, Germany has long required that all private limited liability firms publicly disclose certain annual financial statement information. Unlike most other European countries, Germany did not enforce the requirement for decades and the vast majority of firms did not comply. In November 2006, under pressure from the European Commission, the German government implemented a strict enforcement regime. This change shocked the information environment by making nearly all

firms' financial statement information publicly available (Henselmann and Kaya, 2009).[2] Thus, the setting provides a source of substantial variation in the extent of observable incumbent disclosures that is plausibly exogenous to firm characteristics that affect financing decisions.

Our main empirical prediction is that, in concentrated markets, the sensitivity of entrants' initial leverage ratios to incumbents' leverage ratios increases more for German private firm entrants after the disclosure shock than for private firm entrants in other major European countries where there was no change in enforcement. Using the Bureau van Dijk database Amadeus, we identify de novo product market entrants between 2006 and 2009 based on the year of their incorporation and retain those in concentrated markets. We then match entrants to plausible incumbents in the same industry, year, and region. Matching entrants and incumbents in this way allows a simple test of the sensitivity of entrant to incumbent leverage, which we build out to a difference-in-differences design using French, Italian, and UK private limited liability firms as the control group. Although the enforcement change became effective for fiscal years ending on December 31, 2006, we use 2008 and 2009 as the post period due to a 12-month lag between fiscal year-end and when financial information becomes publicly available. Figure 1 maps the timing of the enforcement shock to our research design.

Consistent with our prediction, we find that German entrants' leverage ratios become more sensitive to incumbents' median leverage ratios in concentrated markets after the disclosure shock relative to the control firms. This increase in sensitivity is about 116% of the unconditional sensitivity of entrant leverage to incumbents' leverage for all countries during the full sample period. The effect is incremental to the effects of region-specific macroeconomic factors,

[2] For example, Creditreform, the leading credit information agency in Germany, dramatically expanded coverage of credit ratings and commercial reports for SMEs after the enforcement shock, indicating that even sophisticated parties with unusual access to proprietary data via private information channels benefited from the shock. See: https://www.creditreform.de/fileadmin/user_upload/crefo/download_de/news_termine/jahresbericht_presse/Jahresbericht_2007-08_deutsch.pdf.

characteristics of the incumbent set, differences across regions, industries, and years in average entrant-incumbent sensitivities, and entrant tangibility, a key determinant of private firm leverage choices (e.g., Brav, 2009).

Our tests benefit from several characteristics of the setting, such as the primacy of lenders and the high reliability of private firms' financials in Europe (e.g., Bernard et al., 2018).[3] They are also subject to certain limitations, including the potential confound of the late-2000s economic crisis and the use of firms from other countries to identify the counterfactual. There is an issue of simultaneity as well—initial financing decisions are made concurrent with initial investment and operating decisions. In this vein, we conduct several additional tests to corroborate our main findings. First, we provide evidence that German entrants mimic incumbents' disclosure choices more after the shock relative to entrants in the control countries. These results help to validate our premise that German entrants' managers acquire and use incumbents' newly available filings.[4]

Second, we examine sources of heterogeneity in our main prediction. We expect the disclosure shock's effect on mimicking is stronger in product markets where no incumbents voluntarily disclose financial information before the shock. Similarly, we expect the effect is stronger when incumbents disclose more complete and audited financial information. In contrast, we predict the effect is weaker when incumbents exhibit unusual levels of leverage, which can occur when inimitable idiosyncratic factors drive financing choices. We also predict the effect is weaker for entrants with high asset tangibility, as the need to benchmark against peers is lower if

[3] Notwithstanding their informational opaqueness, new businesses rely heavily on debt financing (e.g., Hanssens et al., 2016; Robb and Robinson, 2014; Cassar, 2004). This is doubly true in Germany where bank-based financing dominates. Public debt and equity markets play a minor role for most firms (e.g., Leuz and Wüstemann, 2003) and venture capital transactions are relatively uncommon (e.g., in 2007, €0.8 billion versus $26 billion in the US).
[4] Our intent is not to rule out the possibility that banks also use incumbents' financial information. Given that initial financing decisions are made jointly, isolating the information set of managers from lenders is infeasible in our setting.

debt can be collateralized. The findings are consistent with these predictions and help to address alternative explanations. For example, the cross-sectional results do not immediately follow from the possibility that our main findings are due to differences in macroeconomic factors across countries, as distinct from the availability of incumbent disclosures.

Third, we extend our primary model to examine the change in sensitivity of entrant to incumbent leverage in *concentrated versus dispersed* product markets. In doing so we exploit heterogeneity in the strength of the treatment due to differences in market structure across industries and regions, which allows us to address the possibility that the findings are due to some un-modeled factor common to all markets, not just those that are concentrated. This approach also allows for more extensive fixed effects structures, including one that restricts variation to within region-year entrant-incumbent sensitivities, so the results are identified strictly on across-industry variation in market concentration. In all cases the differential change in sensitivities is significantly greater for concentrated than dispersed markets.

Finally, we conduct a falsification test that examines mimicking of small incumbents. De novo entrants tend to start small (to limit sunk costs) and grow to efficient scale, suggesting larger incumbents are the main targets of entrants' learning (Bustamante and Fresard, 2018; Caves, 1998; Dunne et al., 1988). Along these lines, Leary and Roberts (2014) find that public firms react to changes in the financial structure of larger but not smaller peers. Given that smaller incumbents tend to be less relevant for entrants, the availability of smaller incumbents' financials is unlikely to affect entrants' financing decisions. Consistent with this idea, we do not find that the disclosure shock affects entrants' mimicking of smaller incumbents. Evidence that firms mimic "up" but not "down" differentiates our findings from related papers that examine spillover effects of the peer information environment on lending (e.g., Shroff et al., 2017).

The results broadly contribute to our understanding of the effects of public financial statement disclosure on entry behavior and private firms' financing decisions. Unlike fixed asset or product investments that are often observable even in the absence of disclosures, financing decisions are inherently opaque. Yet, notwithstanding the pervasiveness of financial disclosure requirements (e.g., Badertscher et al., 2013), there is little evidence on peer firms' use of this information to inform financing choices. For instance, Breuer et al. (2018) show that financial disclosure and auditing requirements create more transactional banking relationships but they do not examine whether these requirements affect capital structure dependencies. Other studies support the view that public peer firms' financing decisions are interdependent but do not examine *how* this interdependence arises (Leary and Roberts, 2014; Fresard, 2010; Haushalter et al., 2007). For example, aside from learning via public financial disclosures, product markets or information sharing on private networks could also account for transmission of financing peer effects (e.g., Darmouni and Sutherland, 2018; Brander and Lewis, 1986).[5] Evidence of the effects of financial disclosures on product market entrants is even more limited. While several models consider the interplay of information and entry decisions, these models often take information asymmetries with incumbents as given (e.g., Milgrom and Roberts, 1982) or model an incumbent's discretionary disclosure choice (e.g., Darrough and Stoughton, 1990). Related empirical work is limited as well. Breuer (2017) shows that broader financial reporting requirements correspond to greater industry entry and exit. Tomy (2018) studies incumbents' use of reporting discretion to discourage entry in a US banking setting. However, neither studies effects of incumbent disclosure on entrants' post-entry policies.

[5] As Leary and Roberts (2014) note, "[our] results do not reject a particular theory per se... We hope future research will provide additional, and more powerful, evidence on the precise mechanism behind the peer effects."

Our findings complement this work. Our evidence suggests public disclosure of financial information drives capital structure interdependencies among private firm entrant-incumbent pairs. Evidence that learning from established rivals results in more homogenous financing decisions should be informative to managers and regulators interested in understanding the implications of mandatory disclosure requirements. Further, in highlighting the role of public information in facilitating financing choices, the evidence contributes to the body of work that examines product market-capital structure interactions (e.g., Chevalier, 1995) and to the emerging literature on determinants of corporate policies of private firms (e.g., Gao et al., 2013; Minnis, 2011; Brav, 2009).

2. Institutional setting

In contrast to the US, most European countries have long required private limited liability firms to publicly disclose certain financial statement information on an annual basis. These requirements, outlined in EU Directives, are implemented and enforced by each national government. Most countries maintained high levels of compliance with these requirements since their creation. However, the German government failed to effectively enforce public disclosure requirements for decades over concerns that public disclosure could reveal firms' commercially sensitive information and create an administrative burden on SMEs.[6] As a result, the vast majority of German firms did not comply with the disclosure requirements (Kaya, 2010).

Enforcement of financial statement disclosure requirements in Germany changed dramatically in the mid-2000s. In 2003, the European Commission issued the modernized

[6] Disclosure requirements in Germany date from 1987, following the transformation of the EU First Company Law Directive into national law. However, enforcement was negligible. The European Court ruled in December 1997 that Germany failed to provide an appropriate sanction system in case of financial statement non-disclosure. In particular, Germany incorrectly implemented Article 6 of the First Company Law Directive, which requires Member States to provide appropriate penalties in case of failure to disclose the balance sheet and profit and loss account as required by Article 2(1)(f) of the Directive. See European Court Cases C-97/96 and C-191/95.

Disclosure Directive (2003/58/EC), which required EU Member States to ensure all relevant company information be electronically submitted to a central register beginning January 1, 2007.[7] This directive led a ministry of the German federal government to introduce the bill "EHUG" (Electronic Commercial and Company Registrar, *Gesetz über elektronische Handelsregister und Genossenschaftsregister sowie das Unternehmensregister*), which was enacted in November 2006 and first effective for fiscal years ending December 31, 2006. EHUG gave responsibility for monitoring filing requirements to an agency of the national government (Federal Office of Justice, *Bundesamt für Justiz*) and created a new sanction system for non-compliance (Kaya, 2010). As a result, the rate of compliance with public disclosure requirements rose from about 10% to more than 90% (Henselmann and Kaya, 2009).

The passage of EHUG had a major effect on the information environment for private firms, including product market entrants. Beginning in late 2007 (once 2006 accounts were published), entrants in Germany could finally observe basic financial characteristics of incumbents.[8] At a minimum, entrants could observe incumbents' balance sheet and basic footnote information; income statement information and additional note disclosures also became available for medium-sized and large incumbents (Bernard et al., 2018). In contrast, the enforcement of and filing regimes for private firm disclosure requirements in other EU countries (with the exception of Austria) did not change meaningfully in 2006 or adjacent years. These institutional features allow us to compare the financing choices of product market entrants in Germany to those in other major European economies before and after the enforcement shock.

[7] The SLIM ("Simpler Legislation for the Internal Market") Working Group of the European Commission notes that the "traditional system of disclosure on paper (paper filing and publication) was considered outdated and responsible for considerable delays in the accessibility of company information." Therefore, electronic filing and processing of data with a view towards cross-country access were considered main priorities of the modernization of the Disclosure Directive. See: http://users.ugent.be/~ewymeers/WP/SLIM.pdf.
[8] The filings were made available online for free (www.bundesanzeiger.de).

Our methodology builds on the assumption that the enforcement shock provides plausibly exogenous variation in public disclosure at the firm level. This assumption is likely to be satisfied as the change in enforcement was largely due to pressure from the European Commission and not to changing economic conditions or other factors that could be related to financing decisions for German firms (Shroff, 2016). However, a limitation of the setting is that the shock was not staggered and roughly coincided with the global economic crisis of the late 2000s, which, along with the ensuing responses of national governments, may have had different effects on the product and lending markets for firms in Germany versus our control countries. We design the primary tests and additional analyses to help address this limitation and discuss it in further detail in Section 5.7.

3. Empirical prediction and related literature

We predict that public financial disclosure requirements facilitate capital structure mimicking of incumbents by de novo product market entrants. Uncertain of both the "right" model to set financing policies and the model's inputs, managers, lenders, and equity providers, which jointly determine initial financing actions, could use incumbents' financing policies as a guide. This possibility does not require entrants to view incumbents' decisions as optimal for their own decisions. Instead, what is necessary is only that disclosed financing decisions revise entrants' prior beliefs about an appropriate financing mix, perhaps because incumbent decisions partly reveal current market conditions or future expectations. In this way, incumbent disclosures help entrants better gauge the mix of financing that balances reductions in owners' equity risk and tax benefits against potential costs of greater debt. A learning motive is broadly in line with evidence that managers use peers' financial disclosures to inform other corporate decisions, such as to facilitate investment decisions and improve monitoring (Roychowdhury et al., 2018; Shroff

et al., 2013; Holmes and Nicholls, 1988). Similarly, evidence that creditors with access to private information channels still use private firms' public financial disclosures is consistent with the use of peers' financials to gauge appropriate financing policies (Breuer et al., 2018).[9]

Even in the absence of uncertainty about how to set the firm's financing policy, peer financial disclosures may be useful to entrants if the costs or benefits of assuming debt are a function of peers' (otherwise unobservable) debt levels. Theory has long suggested interfirm dependencies in capital structure decisions in oligopolistic markets, as in the limited liability effects of debt studied in Brander and Lewis (1986) or predatory behavior examined in Bolton and Scharfstein (1990). Archival work provides corroborating evidence illustrating the costs of abnormal leverage in concentrated markets. Chevalier (1995) finds that grocery stores in concentrated markets strategically adjust the prices of goods to influence rival LBO firms' entry and exit decisions, implying rivals risk market share or even exit if they are too highly levered. Zingales (1998) finds that the probability of trucking firms' exit after the Carter deregulation is increasing in leverage, an effect he attributes in part to perceptions of counterparty risk in the imperfectly competitive segment of the industry. Campello (2006) provides causal evidence that intermediate levels of leverage relative to rivals helps performance in concentrated markets. The common implication is that mimicking rivals' financial structures plausibly helps to reduce competitive or contracting costs and incentives to mimic are strongest in concentrated markets.

The empirical question hinges on several factors. One is that other channels, such as product markets, could transmit mimicking effects. For instance, a firm with low leverage that pursues an aggressive high-output strategy, as in models of deep-pockets predation, could force other firms to reduce their debt levels. Such a mechanism does not require learning and could

[9] Survey evidence supports a learning motive as well. Tomy (2018) shows that 90% of community bankers she surveys use rivals' financials to analyze competition and a vast majority assess rivals' capital ratios. Many public firm managers also consider peer firms' financing actions as important for their own (Graham and Harvey, 2001).

fully account for prior evidence that capital structure decisions of peer firms are interdependent (e.g., Leary and Roberts, 2014; MacKay and Phillips, 2005). Another is that managers could simply lack sophistication to use incumbent disclosures even if they are easily accessible (Carraher and Van Auken, 2013). It is also possible that the usefulness of financial disclosures to facilitate mimicking is sometimes muted. For example, private firms often rely on relationship banking, which is largely based on "soft" information. If incumbents' leverage ratios are strongly determined by idiosyncratic soft information, then entrants may have little incentive to mimic them.[10] Entrants may also have alternative means to learn about determinants of incumbents' capital structures, such as by conducting market studies using third-party sources, surveying counterparties, or poaching key employees from incumbents.[11] Many of these options do not suffer from the same limitations inherent in financial disclosures (staleness, manipulation, etc.), even if they are more costly.[12] Together, these offsetting factors make the importance of incumbents' financial disclosures to facilitate entrants' capital structure mimicking unclear.

4. Data, empirical methodology, and descriptive statistics

4.1. Data and sample selection

We construct our sample from the Bureau van Dijk database Amadeus, which covers publicly available financial and non-financial data for European private firms (e.g., Bernard, 2016; Burgstahler et al., 2006). The initial sample consists of all firms on Amadeus with fiscal years ending between 2005 and 2010 headquartered in one of the four largest European

[10] Heterogeneity in entrants' beliefs likely affects mimicking as well. Some entrants may see older incumbents as less relevant, because they are at a different stage in their life cycle. In contrast, some may see younger incumbents as less relevant, because they are not proven. Likewise, entrants may seek out older information of incumbents to mimic their choices when the incumbents were entrants. However, changes in investment opportunities, forms of available financing, and product market characteristics could make this older financial information less relevant.
[11] Effects of financial disclosures may also operate via derivatives of disclosed information, such as credit ratings, which complement financial statements (Lisowsky and Minnis, 2018; Cassar et al., 2015; Allee and Yohn, 2009).
[12] At the same time, "true and fair" reporting requirements and the high level of book-tax alignment in much of Europe likely improve the quality of private firm financial disclosures (Bernard et al., 2018; Hanlon et al., 2014).

economies (by GDP): France, Germany, Italy, or the UK.[13] In contrast to Germany, disclosure enforcement changed little during our sample period in France, Italy, and the UK. We use data on private limited liability firms from these countries to approximate the counterfactual.

We impose several basic selection criteria. We first remove observations for very small firms, defined as those with total assets less than or equal to 10,000 British pounds (in the UK) or 10,000 euro (in France, Italy, or Germany).[14] We also eliminate firms with extremely limited financial information and firms with no change in total assets over the sample period, as these firms are typically inactive. Further, we exclude firm-years with missing industry codes, postal codes, or year of incorporation and those that do not have full limited liability legal forms, as the change in the enforcement in Germany only affected private limited liability firms.[15]

The remaining firm-year observations are partitioned into two mutually exclusive and exhaustive categories: entrants or incumbents. We consider a firm-year observation to correspond to entry based on the earlier of (1) the first year the firm appears in the Amadeus database and (2) the firm's reported year of incorporation. Thus, if a firm incorporates in 2006, but the first fiscal year-end with available financial statements is 2007, we classify the observation as entering in 2006. We then use the entrant's first available financial information (from 2007) as the financial information of the firm at the time of entry. All firm-year observations for which entry occurs before the current fiscal year, including entrants in prior years, are considered incumbents.

[13] We ultimately conduct our tests using entrants incorporated in 2006 through 2009, which corresponds to the two years immediately before and after disclosures became available for most firms in Germany. We collect data for fiscal years 2005 through 2010 to more accurately identify entrants' year of entry, as discussed below.
[14] We cut at a low level of size to retain relatively comprehensive coverage of new businesses. The results are robust to cutting at higher levels, though doing so causes sample sizes to decline exponentially.
[15] Limited liability legal forms constitute a large portion of economic activity in each of the sample countries. See: https://ec.europa.eu/eurostat/web/products-datasets/-/bd_9ac_l_form_r2.

We conduct the empirical tests at the unique entrant firm-year level, which requires matching each entrant observation to its incumbent set. Matching is necessary to approximate the entrant's relevant product market, which allows us to measure concentration and to identify incumbents that the entrant is most likely to examine when making initial financing decisions. To this end, we match entrants to incumbents along several dimensions: year, industry, region, and relative size. Prior work commonly uses variations of these criteria to identify small private firms' product markets (e.g., Breuer et al., 2018) when more refined measures, such as those based on computational linguistics (Hoberg and Phillips, 2016), are not available.

To match on year, we use the entrant's year of entry (as defined above) and the concurrent fiscal year of the incumbent. To illustrate, an entrant that incorporates in 2009 and first discloses financial information for 2009 is matched with incumbent observations with fiscal years ending in 2009, even though incumbents' financial statements for 2009 are unlikely to be observable until the end of 2010 or later. Measuring entrant and incumbent financial structure concurrently effectively assumes that entrants, including the firm's managers, lenders, and equity providers, are not naïve consumers of financial information. For example, an entrant in 2009 is unlikely to mimic financial policies revealed in incumbents' financials dated Dec. 31, 2007 without some accounting for the effects of the 2008 crisis and ensuing recession. This approach also benefits from the high level of autocorrelation in private firms' financial structures.[16] Still, we acknowledge the matching procedure is noisier to the extent entrants fail to anticipate changes in incumbent financing policies when they evaluate disclosures from previous years.[17]

[16] The autocorrelation of leverage in our sample for both entrants and incumbents is high—0.91 and 0.83 for the first and second lag, respectively. In contrast, public company financing varies considerably over time, as firms use transitory debt to respond to investment shocks (e.g., DeAngelo and Roll, 2014; DeAngelo et al., 2011). Private firms' restricted access to financing likely explains the relative stability of their financing (Brav, 2009).

[17] The alternative approach of matching entrants to lagged incumbent financial information is infeasible as this information was generally not available until the enforcement shock in 2006—i.e., incumbents' financial information would be generally unavailable for entrants in 2006 and 2007.

To match on industry, we use four-digit NACE Rev. 2 codes, which is the finest level available in the Amadeus data and roughly as granular as five-digit NAICS codes. Since the firms in our sample are private and tend to be small, most compete within a narrow range of products and services. A finer industry definition increases the chance that we are in fact matching entrants and incumbents that compete in the same product market.

To match on region, we use abbreviated postal codes. Setting the levels of postal codes involves a trade-off between making the geographic region too broad versus too narrow; it also requires weighing differences in postal code levels across the sample countries. We use definitions of region that make the average number of incumbents paired to an entrant approximately equal across countries and yields regions with similar area across countries. Specifically, we define region based on the first three digits of a firm-year's postal code for France, Germany, and Italy, and the first two digits of a firm-year's postal code for the UK.

To match on relative size, we exclude from each entrant's incumbent set those incumbents that have lower total assets than the entrant. While smaller firms can compete with larger entrants (e.g., as a small grocer would with a new supermarket), prior work shows that most entrants start small (to limit sunk costs) and grow to efficient scale (Bustamante and Fresard, 2018; Caves, 1998; Dunne et al., 1988). In this way, larger incumbents are the most likely targets of entrants' learning, consistent with evidence in Leary and Roberts (2014) that firms do not react to changes in the financial structure of smaller rivals.

The matching procedure results in each entrant observation being matched to a relevant incumbent set. When the incumbent set is empty, we drop the entrant observation. When the incumbent set includes more than one firm, we collapse the set by taking medians of the incumbents' financial data. This approach assumes that entrants assign equal weight to the

financial data of each incumbent, which approximates the entrant's view of the market if the firm surveys the full set of local competitors rather than focusing on specific incumbents.

Finally, we impose two related selection criteria to restrict our focus to concentrated markets for our primary analyses. We calculate a Herfindahl index based on incumbents' total assets at the country-year-industry-region level and count the number of firms in the entrant's incumbent set. We then exclude observations of entrants in local markets where the Herfindahl index is less than 0.40 or that have ten or more matched incumbents. The former criterion is set so we capture markets in the top two quintiles of concentration (the Herfindahl index is greater than 0.40 for approximately 40% of the markets in our sample), akin to the selection procedure in Hoberg and Phillips (2010). The latter criterion is necessary in addition to the former to exclude entrants with excessively broad incumbent sets—e.g., small firms entering markets with tens or hundreds of other small firms and one or two extremely large firms.[18]

Table 1 outlines our sample selection procedure. Panel A shows that based on a possible 1.02 million unique entrant observations with basic data and limited liability form, our final sample for the main empirical tests includes 138,939 unique entrant-incumbent set observations. The majority of entrant observations not included in the final sample are excluded because they enter relatively dispersed markets. Panels B-C show that the sample is spread relatively evenly across sample countries and years. The country with the largest number of entrants during the sample period is Germany with roughly 29%; the country with the smallest number is Italy with approximately 18%. We also find that the number of entrants per year is relatively stable, even

[18] Because we define product markets narrowly, we view these criteria to identify concentrated markets as fairly unrestrictive. Using somewhat stricter criteria, such as excluding entrants that have five or more matched incumbents, yields qualitatively similar results.

during the financial crisis and ensuing recession.[19] No more than 27% and no less than 23% of the entrant observations enter in a given year.

4.2. Empirical design

Before describing the primary model specification, we briefly discuss a basic model that estimates the sensitivity of entrants' capital structure to incumbents' capital structure:

$$\text{Entrant leverage}_{i,t} = \beta_0 + \beta_1 \text{Incumbent leverage}_{i,t} + \beta_2 \text{Controls}_{i,t} + \varepsilon_{i,t} \quad (1)$$

where incumbent leverage is the median leverage in the incumbent set, and entrant and incumbent leverage are measured concurrently, as discussed above (see Figure 1). Observing $\beta_1 > 0$ indicates that, on average, entrants' leverage decisions are positively related to those of the incumbent set. Assuming the controls fully account for common determinants of leverage, a positive sensitivity implies mimicking: the entrant chooses a financial structure more similar to that of incumbents. For $\beta_1 > 0$, it is not necessary that the median leverage in the incumbent set becomes the target leverage ratio of the entrant. In fact, level differences in leverage are expected given that entrants and incumbents face different financing costs (e.g., due to differing levels of asset tangibility) and investment opportunities that overlap only in part. Instead, $\beta_1 > 0$ only implies that the average entrant has a leverage ratio closer to its incumbent set's median ratio than would otherwise be expected (assuming also, of course, $\beta_1 < 1$), regardless of whether the entrant's ultimate leverage choice is above or below the incumbent set's median ratio.

To test the effect of public financial disclosure on the entrant-incumbent sensitivity, we compare the change in sensitivity before and after the enforcement shock in Germany to the change in other countries where firms were not directly affected by the shock. We expand the specification above and estimate the following difference-in-differences model:

[19] These patterns are consistent with business demography statistics. See, for example: www.destatis.de (for Germany) and www.ons.gov.uk (for the UK).

$$\text{Entrant leverage}_{i,t} = \beta_1(\text{Post} \times \text{DE})_{i,t} + \beta_2(\text{Post} \times \text{DE} \times \text{Incumbent leverage})_{i,t} \quad (2)$$
$$+ \sum\beta_k\text{Controls}_{i,t} + \sum\beta_c\text{CountryInd} + \sum\beta_r\text{Region} + \sum\beta_t\text{Year}$$
$$+ (\sum\beta_c\text{CountryInd} + \sum\beta_r\text{Region} + \sum\beta_t\text{Year}) \times \text{Incumbent leverage}_{i,t} + \varepsilon_{i,t}$$

We measure both entrants' and incumbents' leverage as total book liabilities divided by total book assets. This basic measure of leverage reflects the simplicity of most debt contracts for European SMEs—e.g., public bonds and VC debt financing are uncommon. In addition, measures of leverage using long-term debt to quantify the initial financing choice would substantially limit the main sample, as small German firms often aggregate liabilities to a single, total liabilities position in annual filings, as allowed under national law. The variable Post equals one for entrants in fiscal years 2008 and 2009 and zero otherwise. We use 2008 to begin the post period as this was the first full year in which incumbents' financial disclosures were widely available in Germany. DE is an indicator variable equal to one for firms headquartered in Germany and zero otherwise.

The main coefficient of interest in this specification is the triple interaction (Post × DE × Incumbent leverage) coefficient, β_2. The triple interaction estimates the change in sensitivity of entrants' total leverage for German firms after incumbent data becomes publicly available, relative to the change in sensitivity for firms in France, Italy, and the UK over the same time period. A positive coefficient, $\beta_2 > 0$, is consistent with incumbents' public disclosures facilitating capital structure mimicking by entrants.

We include several controls for firm characteristics and macroeconomic factors that may incrementally explain entrants' initial financing decisions. We control for entrant asset tangibility (fixed assets scaled by total assets), which proxies for the collateral value of the firm's assets and is a key determinant of private firm leverage choices (e.g., Brav, 2009). Controlling for asset

tangibility is especially important given that investment choices are critical in entry, and rivals could use other firms' disclosures in part to improve investment decisions (e.g., Badertscher et al., 2013; Durnev and Mangen, 2009). We also include proxies for the median asset tangibility and cash holdings (total cash scaled by total assets) in the incumbent set. Entrants could respond not only to the actual financing choices of incumbents but also to their debt capacity, as well as excess (or precautionary) cash holdings that could pay down existing debt. In addition, we control for the dispersion of incumbent leverage (Leary and Roberts, 2014) and market concentration based on evidence that financing choices are sensitive to market structure (e.g., Haushalter et al., 2007; Opler and Titman, 1994). Finally, macroeconomic controls include GDP growth and the log of capital formation per capita in each firm's macro-region for each year.[20]

Our specification also includes an extensive fixed effects structure, which is important to address a number of potential confounds. We include country-industry and region fixed effects, where industry and region are defined as in our matching procedure, to restrict our identification to within country-industry and within region variation. This combination of fixed effects eliminates average differences in entrant leverage across country-industries and regions, which removes any static variation in economic conditions that may affect entrants' initial financing choices. For example, region fixed effects eliminate time-invariant differences in credit market conditions and marginal tax rates across regions and country-industry fixed effects eliminate time-invariant differences in the liquidity of asset resale markets across industries (one component of exit costs). Year fixed effects eliminate any temporal differences in leverage among entrants, which is important given evidence on capital structure cyclicality (e.g., Korajczyk and Levy, 2003). We also interact each fixed effect with incumbent leverage to allow

[20] Macro-regions are NUTS2 regions, which are broader than abbreviated postal codes and are used across the EU to construct localized macroeconomic statistics.

the relation between entrant and incumbent leverage to vary by each country-industry, region, and year. Thus, the main coefficient of interest, β_2, is incremental to any factors captured by average entrant-incumbent sensitivities across country-industries, regions, and years.

4.3. Descriptive statistics

Table 2 presents basic descriptive statistics for entrants and incumbents in our sample. We winsorize all continuous variables at the 2.5 and 97.5 percentiles because data on private firms tend to have more extreme outliers than comparable data on public firms (e.g., Gao et al., 2013; Minnis, 2011). Panel A shows that entrants have mean total assets of approximately 200,000 in local currency and leverage of 0.78. Matched incumbents are slightly less levered than corresponding entrants and have total assets about seven times larger, a size differential we anticipate given our entrant-incumbent matching procedure only retains incumbents at least as large as the entrant. We also find that entrants and incumbents have relatively similar levels of fixed asset tangibility, but that entrants tend to hold more cash than incumbents as a percentage of total assets. Our matching methodology often, but not always, matches multiple incumbents to each entrant; on average, entrant observations are matched to approximately 2.8 incumbents.

In additional untabulated descriptives, we also calculate the average (across industries) standard deviation (across regions) of median incumbent leverage, for each country and year. Intuitively, a higher average standard deviation implies that it is more difficult for entrants to rely on non-local incumbents' financials—e.g., for German entrants to simply rely on French and UK financials before the enforcement shock. We find that the average standard deviation of median incumbent leverage is roughly 0.26 across all countries and years and differs only slightly over time and across countries (e.g., the average standard deviation is lowest for Italy at 0.20). This level of variation is substantial relative to mean incumbent leverage of 0.70 (Table 2).

5. Results

5.1. Main results

Our main results are presented in Table 3. Column (1) provides a baseline specification where entrant leverage is regressed on incumbent leverage and country-industry, region, and year fixed effects. The coefficient on incumbent leverage estimates the sensitivity of entrant leverage to the median leverage of firms in the incumbent set after controlling for time-invariant differences across country-industries and regions as well as any temporal trends. We find a positive and significant relation between entrant and incumbent leverage in this baseline specification; an increase in incumbent leverage of one is associated with an increase in entrant leverage of 0.028. While this is much smaller than the 1:1 ratio implied by perfect mimicking, the magnitude of the empirical estimate is likely lessened by the effects of noise in the matching procedure and by weak incentives for mimicking in some parts of the sample, which we explore below. Nonetheless, the effect is highly statistically significant, and the baseline model provides reasonably good explanatory power—the adjusted R^2 is approximately 13%.

Control variables are added in Column (2). We find that the coefficients on entrant tangibility and capital formation per capita are positive and significant, the coefficients on dispersion of incumbent leverage, GDP growth, and the Herfindahl index are negative and significant, and the coefficients on incumbent tangibility and cash holdings are not significant.

Finally, in Column (3) we estimate the primary specification, Eq. (2), which includes interactions of the full slate of fixed effects with incumbent leverage. These interactions subsume the main effect of incumbent leverage and its interactions with Post and DE. The coefficient on $\text{Post} \times \text{DE} \times \text{Incumbent leverage}$ is positive and significant at the 1% level, with a coefficient of 0.044. This represents an increased sensitivity of approximately 116%

(0.044/0.038) of the unconditional sensitivity of entrant leverage to incumbent leverage estimated in Column (2). Thus, the evidence is consistent with an economically significant increase in the sensitivity of entrants' initial financing choices due to the availability of incumbents' disclosures.[21]

5.2. Mimicking of incumbents' disclosure practices

Our interpretation of the results rests on the assumption that entrants acquire and use incumbents' financial disclosures. Testing this assumption directly is difficult; how managers or lenders use incumbent information to inform financing decisions is inherently unobservable, and because small and medium-sized firms rarely have unique IP addresses, identifying them using server log data is infeasible. However, we can provide evidence of entrants' acquisition and use of incumbents' disclosures in a related context. Managers of new firms are often uncertain about national disclosure requirements and common practices when they first prepare financials (Collis, 2008). One means of resolving this uncertainty is to mimic the structure and content of incumbent disclosures. Thus, if entrants acquire and use incumbents' financial information, then we should also observe greater disclosure mimicking in Germany after the enforcement shock.

We test this by examining the disclosure of employee count information—a highly standardized disclosure across the sample countries. We infer whether the firm discloses its average employee count during the year based on whether the employee count variable in Amadeus is missing. We adjust Eq. (2) by replacing entrant leverage (incumbent median leverage) with an indicator for the presence of the employee count disclosure by the entrant (by

[21] Untabulated tests show this result is robust to reasonable alternative design choices, including winsorizing instead at the 1st and 99th percentiles or at the 5th and 95th percentiles, controlling for contemporaneous entrant size (total assets), or dropping contemporaneous entrant asset tangibility. Typically, studies of the determinants of leverage control for *lagged* entrant characteristics to minimize concerns about simultaneity (e.g., Lemmon et al., 2008; Rajan and Zingales, 1995). This approach is not possible in our setting, as the financial information we use is the first prepared and published for entrants and information for German incumbents prior to 2006 is not widely available.

any incumbent in the incumbent set). The results of this analysis are presented in Table 4. We find a positive and significant increase in employee disclosure mimicking in Germany following the enforcement shock, consistent with our expectations.[22]

5.3. Cross-sectional results

The use of public disclosures to facilitate capital structure mimicking likely depends on several entrant and incumbent set characteristics. We examine four sources of systematic heterogeneity to further support our main prediction.

First, we examine whether the availability of German incumbent disclosures prior to the enforcement shock attenuates the main effect. A minority of firms in Germany voluntarily disclosed financial information before the shock (e.g., Henselmann and Kaya, 2009), so in some product markets incumbent information was already available for entrants in 2006 and 2007. The results should be muted in these markets if the increase in mimicking in Germany after 2007 is due to the sudden availability of incumbent disclosures.

In Table 5, Panel A we split the sample based on whether any incumbent in the German entrant's incumbent set disclosed financial information for fiscal year 2004. We base this cut on the availability of 2004 rather than 2005 financials to ensure the information was available during 2006 (i.e., because of the disclosure lag). We include the full set of control firms in both splits. We find that the triple interaction is positive and statistically significant for German entrants in markets where incumbents did not disclose prior to the enforcement shock, but insignificant for entrants in markets where some incumbents did disclose.

Second, we examine whether the main effect varies with the extent and reliability of information available in incumbent disclosures. In Germany, disclosure and audit requirements

[22] We exclude control variables because other determinants of employee disclosure are likely to be highly idiosyncratic (e.g., Collis, 2008). Regardless, including controls such as market concentration and tangibility sometimes used in the disclosure literature yields similar results (untabulated).

are not uniform. Private firms below size thresholds are only required to disclose an unaudited, abbreviated balance sheet plus limited footnote information. Firms above these size thresholds are required to disclose expanded balance sheet and notes information as well as an income statement, and the financials must be audited (Bernard et al., 2018). We expect that entrants surveying the local market before entry are more likely to use incumbents' financial information when it is more complete and reliable (e.g., includes disaggregated debt structure information).

In Table 5, Panel B we split the sample based on whether any incumbent in the German entrant's incumbent set discloses an income statement, which is typically only available if the financials are audited and also include other expanded disclosures (Bernard et al., 2018).[23] We infer income statement disclosure based on whether the incumbent's data on profit or loss is missing in Amadeus. Again, we include the full set of control firms in both splits. We find that the triple interaction is statistically significant for the subset of entrants that have access to more complete and reliable financials for at least one incumbent, but insignificant for other entrants.[24]

Third, we examine the sensitivity to unusual levels of incumbent leverage. We expect that entrants are less likely to mimic incumbents if they exhibit an unusual financial structure. Some incumbents may be in distress, have access to unusual levels of equity capital (e.g., via an owner's personal wealth), or exhibit highly unusual levels of leverage for other reasons, which makes mimicking either infeasible or prohibitively costly. In these situations, entrants have stronger incentives to supplement information on local competitors with a broader set of industry rivals that exhibit more informative financing structures for the firm's own financing choice.

[23] Tabulated results are based on incumbents' concurrent disclosures. Results are similar if we split the sample only for 2008-2009 entrants based on incumbents' 2006-2007 disclosures—i.e., the filings available in 2008-2009.

[24] One possibility is that entrants use information about incumbents' profitability—rather than financing actions—when setting initial financing policies. To examine this possibility, we modify Eq. (2) to replace median incumbent leverage with median incumbent profitability, where profitability equals profit before tax divided by total assets. Untabulated results show a statistically insignificant coefficient on $\text{Post} \times \text{DE} \times \text{Incumbent profitability}$. We note that these results may not be directly comparable to our main tests because a majority of German and UK firms in our sample do not disclose an income statement.

This prediction is also consistent with work that shows extreme levels of leverage are associated with underperformance (Campello, 2006), as entrants should be less interested in learning from incumbents likely to do worse in the future.

In Table 5, Panel C we split the sample based on the interquartile range of country-industry-adjusted leverage ratios. We separately estimate our primary model using entrant-incumbent sets for which the incumbent sets exhibit median leverage ratios that are (1) within the interquartile range for the country-industry or (2) outside the interquartile range for the country-industry. Consistent with our expectations, we find that the triple interaction is muted when incumbents exhibit unusual financial structures, but is positive and significant otherwise.

Finally, we examine the role of entrants' asset tangibility. The information problems inherent in small firm financing are less relevant for firms with high levels of collateral (e.g., Cassar et al., 2015; Martinelli, 1997). For example, a lender's need to benchmark a potential borrower against peers to predict cash flow volatility and bankruptcy risk is lower if the debt can be collateralized. Thus, an entrant's need to consider peers' financing choices—and plausibly to mimic these choices—is reduced when the firm has more assets that can serve as collateral.

In Table 5, Panel D we split the sample based on the median level of entrant asset tangibility for each country-year, our proxy for the value of assets in bankruptcy, akin to Campello (2006) and Fresard (2010). We find that the increased mimicking in Germany in the post period is concentrated among entrants with low levels of asset tangibility, suggesting the disclosure shock's effect on entrant-incumbent capital structure sensitivities is strongest for entrants that do not have the benefit of relatively high levels of collateral.

Overall, the results of the cross-sectional tests show substantial heterogeneity in the effect of public disclosure on mimicking and follow from prior work. The findings shed light on the

conditions that lead entrants to acquire incumbent information and help to address alternative explanations that do not imply the same cross-sectional heterogeneity.

5.4. Mimicking in dispersed versus concentrated markets

Our main tests impose the selection requirement that the market is concentrated. As discussed above, the motivation for this restriction is several-fold: empirical evidence and theory suggest strategic considerations are magnified in concentrated markets (e.g., Campello, 2006; MacKay and Phillips, 2005; Chevalier, 1995; Opler and Titman, 1994) and each incumbent disclosure is more informative of market conditions and other factors of interest in concentrated markets (Bustamante and Fresard, 2018; Hoberg and Phillips, 2010). Moreover, information leakage is more likely in dispersed markets simply because there are more firms. These factors make it unlikely that the enforcement shock facilitates capital structure mimicking in relatively dispersed markets, which allows us to use the change in mimicking in Germany in these dispersed markets to refine our counterfactual. Specifically, we expand the difference-in-differences design to instead use a triple-difference (which yields a quadruple interaction) based on the change in sensitivities in concentrated versus dispersed markets. Thus, for this test, we adjust the matching procedure to include entrants matched to incumbents in *both* concentrated and dispersed markets (i.e., all markets not classified as concentrated).

The results are presented in Table 6. We find that the change in sensitivities is significantly positive for concentrated markets *relative to* dispersed markets (Column 1). This latter finding is robust to the use of an extensive fixed effects structure that eliminates variation attributable to region-year factors, which could include macroeconomic factors, regulatory changes, etc. (Column 2). In other words, we find evidence consistent with our prediction when we restrict the variation to be across concentrated versus dispersed industries *within each region-*

year. These findings again help to address concerns about extraneous factors driving the results—namely, any un-modeled factor common to both dispersed and concentrated markets.

5.5. Mimicking small incumbents

A premise of our matching procedure is that entrants are unlikely to mimic relatively small incumbents, consistent with evidence that public firms react to financing changes of larger but not smaller industry peers (Leary and Roberts, 2014). This suggests a falsification test: if factors unrelated to the disclosure shock drive the main results, such as time-varying factors that affect regions differently (e.g., changes in the local credit market or stimulus initiated during the financial crisis), but which affect firms within industries and within each region similarly, then we should find similar results if we match entrants to smaller, rather than larger, incumbents.

Table 7 present the results of estimating Eq. (1) and Eq. (2) when we reconstruct the matching procedure to restrict the possible incumbent set to firms smaller than entrants based on total assets. In Column (1) we find no statistically significant evidence of mimicking, which is consistent with weak incentives for entrants to mimic smaller incumbents. In Column (2) we find a statistically insignificant coefficient on $\text{POST} \times \text{DE} \times \text{Incumbent leverage}$. This result reinforces our interpretation that the disclosure shock, rather than some un-modeled time- and region-varying factor, accounts for the differential change in mimicking.

5.6. Mimicking of debt maturity structure

A learning mechanism implies not only that incumbents' financials affect entrants' views of the appropriate overall leverage decision, but also of the maturity structure of debt contracts. For example, the revealed debt structures of rivals could revise entrants' perceptions of financing constraints to mitigate competitive threats in the industry (e.g., Bolton and Scharfstein, 1990) or beliefs about maturity matching (e.g., Demirgüç-Kunt and Maksimovic, 1999). We provide

evidence on this prediction using a subsample of the observations in our main analysis. Many German firms, including both entrants and incumbents, do not separately disclose long- versus short-term liabilities, as doing so is not required for small firms (Bernard et al., 2018). Thus, by necessity we drop observations of German entrants and incumbents that do not disclose their debt structure.[25]

Table 8 presents the results when we re-estimate Eq. (1) and Eq. (2) by replacing the entrant leverage and incumbent median leverage variables with analogous variables for the portion of total debt that is long-term. Similar to Table 3, in Column (1) we find a positive and significant coefficient on Incumbent leverage. In Column (2) we find a positive and marginally significant coefficient on POST × DE × Incumbent leverage, providing evidence that entrants mimic the debt maturity structure of incumbents more in Germany than in the control countries after the enforcement shock.

5.7. Limitations and alternative interpretations of results

Due to certain features of the setting and data, our findings are subject to unavoidable limitations that prevent us from fully ruling out all alternative interpretations of the results. Nonetheless, the combination of evidence makes most of these alternative interpretations unlikely. We briefly discuss some of these interpretations and how they relate to the evidence.

The primary threat to the validity of the main results is the presence of a lurking factor that drives the differential sensitivity of entrant to incumbent leverage in Germany versus the control countries after 2007. A simple alternative explanation is that the differential sensitivity is due to various differences in macroeconomic factors related to the financial crisis. However, this explanation does not have clear implications for the remaining tests, including the cross-sectional

[25] If the firm does not disclose its debt structure, Amadeus sets non-current liabilities equal to total liabilities and codes current liabilities as zero. We drop all firms that disclose positive non-current liabilities but zero current liabilities, which constitute roughly 32% of German observations in the main analysis.

tests, the analysis of disclosure mimicking, or the difference-in-difference-in-differences test, which eliminates region-year variation. Another explanation could be that incumbents, *but not entrants*, react to the disclosure shock, and changes in the sensitivity of incumbent to incumbent leverage could somehow induce the apparent change in the sensitivity of entrant to incumbent leverage. This possibility seems unlikely, given learning via incumbent disclosures is almost certainly more important when the firm cannot rely on its own experience in the market. Regardless, our analyses use median incumbent leverage ratios to proxy for entrants' view of incumbents' financing decisions, so greater incumbent to incumbent leverage mimicking is unlikely to be a sufficient condition for an alternative explanation.

A related concern could be that a selection effect drives the results. Because mandatory disclosure requirements impose costs on entrants, firms that incorporate after the disclosure shock could have characteristics more similar to incumbents than entrants that incorporate before. However, the design all but eliminates this possibility as an alternative explanation. The lag in the public availability of disclosures in Germany allows us to use 2006 and 2007 as the pre-period, years for which the disclosure requirements were already in effect.[26] That is, German entrants in 2006 and 2007 were aware of the disclosure requirements and were required to comply, as were entrants in 2008 and 2009, so German entrants in both the pre and post-periods faced costs stemming from the disclosure requirements.

Another concern, as with any study examining peer effects, is endogeneity related to the reflection problem (Leary and Roberts, 2014; Manski, 1993). A reflection problem could provide an alternative explanation for the main results if incumbents' leverage choices are a function of entrants' leverage choices *and* this incumbent to entrant mimicking increases in Germany versus

[26] The original bill creating a stronger enforcement regime for private firm disclosure requirements in Germany was introduced in mid-2005 (see Bernard, 2016).

the control countries after 2007. The former condition is unlikely given evidence that firms mimic larger, more successful firms but not vice versa (Leary and Roberts, 2014), and our matching criteria relate entrants only to larger, established incumbents. The latter condition is necessary in addition to the former because any incumbent to entrant mimicking not attributable to the disclosure shock should be present throughout the sample for all countries. Regardless, any bias due to a reflection problem needs to simultaneously induce the cross-sectional evidence and eliminate any evidence of mimicking when we match entrants only to smaller incumbents.

Other concerns could involve the partial compliance of German incumbents before the disclosure shock. Partial compliance implies that the main results could differ if no incumbents disclosed prior to the shock; however, cross-sectional results show the results are quite similar when we focus exclusively on markets where no incumbents disclosed prior to the shock. It could also be that the main results are a by-product of entrants mimicking incumbent characteristics other than leverage. The limited information available in private company accounts greatly restricts the scope of other forms of mimicking that are plausible, and the mechanism that could induce apparent leverage mimicking is unclear. For example, we control for entrant tangibility, so any mimicking that would induce leverage mimicking via tangibility is unlikely. How another form of mimicking would give rise to evidence of mimicking of debt maturity structures, in addition to the other cross-sectional evidence, is also unclear.

6. Summary and conclusions

We examine the effects of product market incumbents' financial disclosures on entrants' initial financing decisions. We predict that the public availability of these disclosures reduces entrants' uncertainty about the benefits and costs of financing choices in concentrated markets and leads to greater capital structure mimicking of incumbents by entrants. To test our

predictions, we exploit a shock to the enforcement regime for German private firms' annual financial disclosures in the mid-2000s. In this setting, ex ante voluntary disclosure is uncommon, low-cost alternative information sources are scarce, and disclosures made ex post are both easily accessible and reliable, as they are subject to scrutiny by tax authorities (e.g., Hanlon et al., 2014; Burgstahler et al., 2006). These institutional characteristics help to isolate substantial and plausibly exogenous variation in the availability of financial information about incumbents (Shroff, 2016).

Our results suggest an economically significant effect of the public availability of incumbents' financial statements on entrants' capital structure choices. We find that mimicking increases substantially after the enforcement shock relative to firms in other major European economies unaffected by the shock. The results of a number of cross-sectional tests and additional analyses support our interpretation of the results.

While our findings provide initial evidence on public financial disclosure as a mechanism to partly explain entrant-incumbent capital structure dependencies, further evidence is needed. Entry is a critical factor in the competitive process, yet the effects of financial disclosures on entry behavior and post-entry financing decisions remain largely unexplored.

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Figure 1

Regulatory timeline and application to entrant-incumbent matching.

This figure summarizes the timeline of the enforcement shock and its application to the research design.

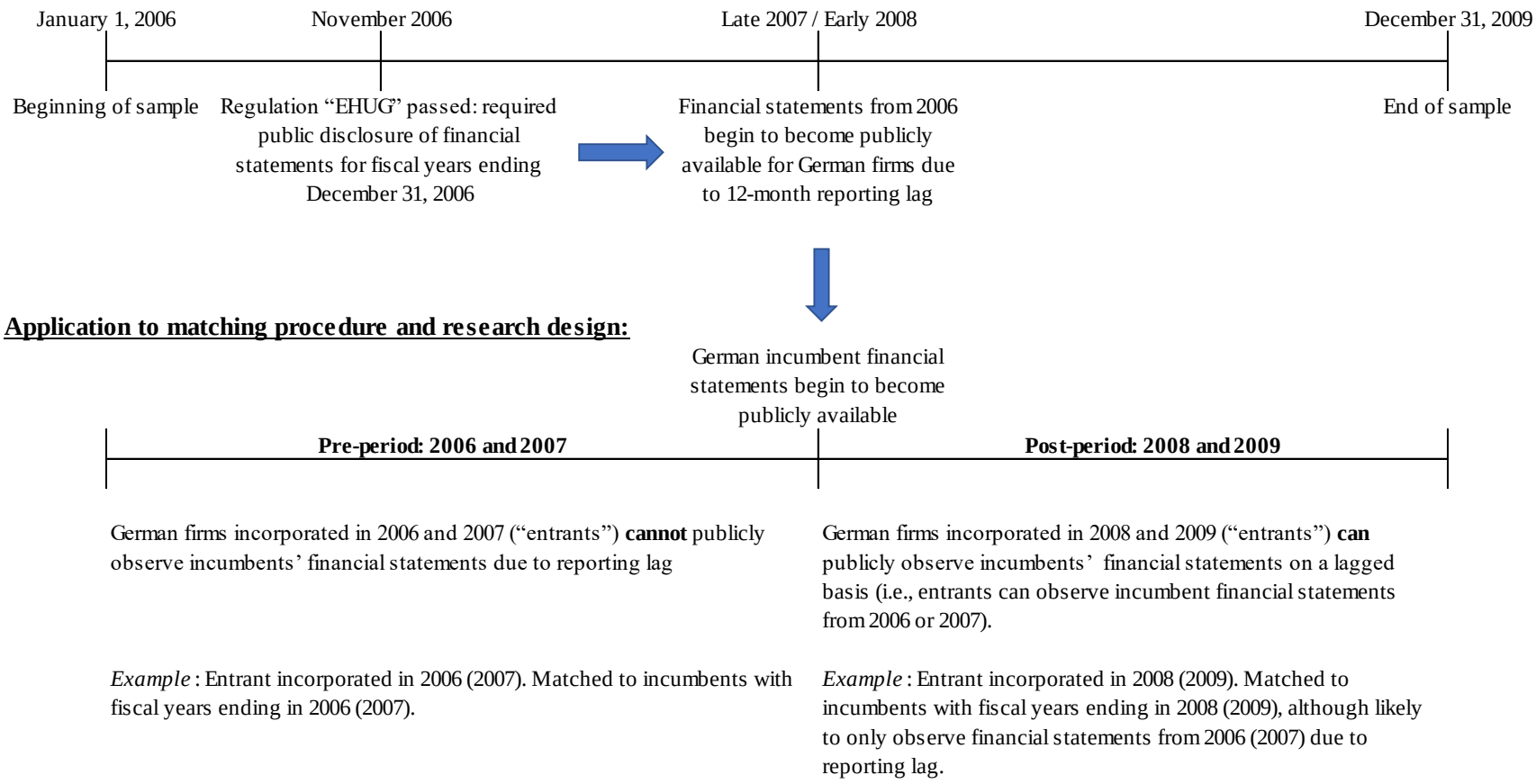

Table 1

Sample selection and observations.

This table presents the sample selection procedure in Panel A and summarizes the availability of observations by year and country in Panels B and C.

Panel A: Sample selection

All firm-years in the Bureau van Dijk Amadeus database headquartered in France, Germany, Italy, and the United Kingdom with greater than 10,000 in total assets between July 1, 2005 and December 31, 2010.	20,003,861
Less observations of firm-years:	
missing principal industry code (NACE Rev. 2), postal code of headquarters, total assets, or year of incorporation.	(466,396)
with limited financial information.	(394,713)
with organizational types other than full limited liability.	(3,881,711)
dormant or non-operating (with zero change in total assets over the sample period).	(88,280)
Subtotal: firm-years before entrant-incumbent matching procedure	**15,172,761**
	Entrant firm-years
Number of entrant firm-years with basic information from above.	1,019,301
Less observations of firm-years:	
with no valid incumbents matched to an entrant.	(91,597)
not in concentrated markets (HHI < 0.40 or with more than ten matched incumbents).	(783,430)
with missing entrant or incumbent data required for main regressions.	(3,680)
with missing regional macroeconomic data.	(1,456)
singletons based on country-industry, region, and year.	(199)
Final sample for main regressions	**138,939**

Panel B: Observations by year

Year incorporated	N	% of Total
2006	33,259	23.94
2007	36,972	26.61
2008	35,645	25.66
2009	33,063	23.80

Panel C: Observations by country

Country	N	% of Total
Germany	40,667	29.27
France	36,749	26.45
United Kingdom	36,990	26.62
Italy	24,533	17.66

Table 2

Descriptive statistics.

This table presents basic descriptive statistics for entrants in Panel A and incumbents in Panel B. Pearson correlations between selected variables are presented in Panel C. When multiple incumbents are matched to a single entrant, we collapse the incumbent data by taking medians of the incumbents' financial data. Leverage equals total liabilities divided by total assets. Tangibility equals total fixed assets divided by total assets. Cash holdings equals cash and cash equivalents divided by total assets. Negative equity indicator equals one if total shareholders' equity is negative and zero otherwise. Herfindahl index is formed based on the total assets of incumbents at the country-region-industry-year level, where industry is categorized using four-digit NACE Rev. 2 codes and region is categorized using abbreviated postal codes. Number of incumbents equals the number of incumbents matched to a given entrant. GDP growth is annual growth in GDP at the macro-region level. Capital formation per capita is the natural logarithm of capital investment scaled by population at the macro-region level. Year incorporated is the earlier of the entrant observation's year of incorporation from Amadeus or first year with available financial information. Dispersion of leverage is the standard deviation of leverage among the matched incumbent set. All continuous variables, aside from the macroeconomic controls, are winsorized at the 2.5th and 97.5th percentiles. Bolded values in Panel C are significant at the 1% level.

Panel A: Descriptive statistics for entrants

	N	*Mean*	*S.Dev*	*P10*	*P25*	*P50*	*P75*	*P90*
Total assets (in 000s)	138,939	199.36	377.79	15.79	26.51	64.89	173.37	468.07
Leverage	138,939	0.781	0.407	0.201	0.537	0.831	0.978	1.179
Tangibility	138,939	0.291	0.309	0.000	0.021	0.163	0.517	0.811
Cash holdings	130,759	0.303	0.304	0.010	0.052	0.188	0.482	0.837
Negative equity indicator	138,939	0.185	0.388	0	0	0	0	1
Herfindahl index	138,939	0.702	0.214	0.441	0.507	0.656	0.946	1
Number of incumbents	138,939	2.80	2.19	1	1	2	4	6
GDP growth	138,939	0.005	0.060	-0.114	-0.024	0.030	0.044	0.057
Capital formation per capita	138,939	8.69	0.31	8.36	8.53	8.67	8.82	9.05
Year incorporated	138,939	2007	1	2006	2007	2007	2008	2009

Panel B: Descriptive statistics for incumbents

	N	*Mean*	*S.Dev*	*P10*	*P25*	*P50*	*P75*	*P90*
Total assets (in 000s)	138,939	1836.86	4349.72	92.11	191.98	452.78	1223.76	3714.12
Leverage	138,939	0.704	0.271	0.344	0.524	0.714	0.878	0.988
Dispersion of leverage	138,939	0.201	0.262	0.000	0.000	0.118	0.311	0.499
Tangibility	138,939	0.295	0.259	0.026	0.081	0.214	0.455	0.722
Cash holdings	138,939	0.175	0.184	0.007	0.032	0.109	0.261	0.455
Negative equity indicator	138,939	0.089	0.258	0	0	0	0	0.5
Age (years since incorporation)	138,939	12.16	11.65	3	5	9	16	24

Table 2 (continued)
Univariate correlations.

Panel C: Pearson correlation matrix

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	Entrant leverage	1.00										
(2)	Incumbent leverage	**0.04**	1.00									
(3)	Entrant tangibility	**0.21**	**-0.01**	1.00								
(4)	Incumbent tangibility	**0.04**	**0.05**	**0.30**	1.00							
(5)	Incumbent cash holdings	-0.01	**-0.32**	**-0.08**	**-0.33**	1.00						
(6)	Dispersion of incumbent leverage	**-0.04**	**0.11**	**-0.05**	**-0.04**	**-0.03**	1.00					
(7)	Herfindahl index	**-0.02**	0.00	**-0.03**	**0.02**	**0.04**	**-0.34**	1.00				
(8)	GDP growth	**-0.08**	**0.03**	0.01	0.00	**-0.04**	**-0.09**	**0.03**	1.00			
(9)	Capital formation per capita	**-0.02**	**-0.01**	**-0.01**	**-0.05**	**0.04**	0.00	**0.01**	**0.31**	1.00		
(10)	Entrant total assets	**0.06**	**-0.02**	**0.21**	**0.18**	**-0.15**	**-0.11**	**-0.06**	**0.04**	**0.05**	1.00	
(11)	Incumbent total assets	0.00	**-0.04**	**0.11**	**0.17**	**-0.14**	**-0.06**	**0.08**	0.01	**0.04**	**0.60**	1.00

Table 3

The effect of incumbent disclosure on entrant capital structure mimicking.

This table presents the results of estimating the main specification using OLS. The dependent variable in each regression is entrant leverage. The first column estimates a baseline sensitivity of entrant to incumbent leverage without controls. The second column adds control variables and thus estimates Eq. (1). The third column estimates Eq. (2), building on the second column by interacting each of the fixed effects with incumbent leverage (indicator variables for Post and DE and their interactions with incumbent leverage are subsumed in this specification). Leverage equals total liabilities divided by total assets. Post equals one for years 2008 and 2009 and zero otherwise. DE equals one for German firms and zero otherwise. Tangibility equals total fixed assets divided by total assets. Cash holdings equals cash and cash equivalents divided by total assets. Dispersion of incumbent leverage is the standard deviation of leverage among the matched incumbent set. GDP growth is annual growth in GDP at the macro-region level. Capital formation per capita is the natural logarithm of capital investment scaled by population at the macro-region level. Herfindahl index is formed based on the total assets of incumbents at the country-industry-region-year level, where industry is categorized using four-digit NACE Rev. 2 codes and region is categorized using abbreviated postal codes. All continuous variables are winsorized at the 2.5th and 97.5th percentiles. *T*-statistics (in parentheses) are calculated using clustered standard errors at the industry and macro-region levels. Statistical significance at the 1%, 5%, and 10% levels (two-tailed) are denoted with ***, **, and *, respectively.

	Baseline without controls	Baseline with controls [Eq. (1)]	Add: FE interactions [Eq. (2)]
	Entrant leverage	Entrant leverage	Entrant leverage
Incumbent leverage	0.028***	0.038***	
	(5.57)	(7.08)	
POST x DE			-0.015
			(-1.15)
POST x DE x Incumbent leverage			0.044***
			(2.70)
Entrant tangibility		0.276***	0.276***
		(17.81)	(17.69)
Incumbent tangibility		0.005	0.004
		(0.56)	(0.48)
Incumbent cash holdings		0.004	-0.001
		(0.45)	(-0.09)
Dispersion of incumbent leverage		-0.058***	-0.058***
		(-4.96)	(-4.77)
GDP growth		-0.168***	-0.196***
		(-4.11)	(-4.29)
Capital formation per capita		0.022*	0.016
		(1.77)	(1.36)
Herfindahl index		-0.020**	-0.019**
		(-2.52)	(-2.32)
N	138,939	138,939	138,939
Adjusted R^2	0.131	0.167	0.168
Country-industry and region and year FEs	Yes	Yes	Yes
FEs interacted with leverage	No	No	Yes

Table 4

Entrant mimicking of incumbent employee disclosures.

This table presents an extension of Eq. (2) that replaces entrant and incumbent leverage with entrant and incumbent employee disclosures. Entrant employee disclosure equals one if the number of employees is non-missing (i.e., the firm discloses) and zero if missing. Incumbent employee disclosure equals one if the number of employees is non-missing for at least one incumbent and zero otherwise. The first column estimates a baseline sensitivity of entrant to incumbent employee disclosure, and the second column adds in indicator variables for Post and DE and their interactions with incumbent employee disclosure. Post equals one for years 2008 and 2009 and zero otherwise. DE equals one for German firms and zero otherwise. *T*-statistics (in parentheses) are calculated using clustered standard errors at the industry and macro-region levels. Statistical significance at the 1%, 5%, and 10% levels (two-tailed) are denoted with ***, **, and *, respectively.

	Baseline	Difference-in-differences
	Entrant employee disclosure	Entrant employee disclosure
Incumbent employee disclosure	0.010***	
	(4.32)	
POST x DE		-0.004
		(-0.99)
POST x DE x Incumbent employee disclosure		0.012**
		(2.17)
N	138,939	138,939
Adjusted R^2	0.174	0.179
Country-industry and region and year FEs	Yes	Yes
FEs interacted with employee disclosure	No	Yes

Table 5

Cross-sectional tests.

This table presents the results of cross-sectional tests. Panel A partitions German observations based on whether a firm in the incumbent set publicly disclosed financial information prior to the enforcement shock. The first (second) column includes German observations where no (at least one) incumbent in the incumbent set disclosed financial information for the fiscal year 2004. Panel B partitions German observations based on the completeness and reliability of incumbent disclosures. The first (second) column includes German observations where at least one (no) incumbent in the incumbent set has non-missing data on bottom line profit/loss. Panel C partitions all observations based on the interquartile range of country-industry-adjusted leverage ratios for incumbent sets. The first (second) column contains observations where the median leverage of the incumbent set falls within (outside) the interquartile range of the country-industry. Panel D partitions all observations based on entrant fixed asset tangibility. We calculate the median entrant tangibility for each country-year. The first (second) column retains observations where an entrant's tangibility is below (above) the median. The dependent variable in each regression is entrant leverage. Leverage equals total liabilities divided by total assets. Post equals one for years 2008 and 2009 and zero otherwise. DE equals one for German firms and zero otherwise. Tangibility equals total fixed assets divided by total assets. Cash holdings equals cash and cash equivalents divided by total assets. Dispersion of incumbent leverage is the standard deviation of leverage among the matched incumbent set. GDP growth is annual growth in GDP at the macro-region level. Capital formation per capita is the natural logarithm of capital investment scaled by population at the macro-region level. Herfindahl index is formed based on the total assets of incumbents at the country-industry-region-year level, where industry is categorized using four-digit NACE Rev. 2 codes and region is categorized using abbreviated postal codes. Controls and *POST x DE* are untabulated for brevity. All continuous variables are winsorized at the 2.5th and 97.5th percentiles. *T*-statistics (in parentheses) are calculated using clustered standard errors at the industry and macro-region levels. Statistical significance at the 1%, 5%, and 10% levels (two-tailed) are denoted with ***, **, and *, respectively.

	Panel A: Prior incumbent disclosures		Panel B: Incumbent I/S disclosures		Panel C: Unusual incumbent leverage		Panel D: Entrant asset tangibility	
Dependent variable = Entrant leverage	No DE incumbent disclosure pre-2005	DE incumbent disclosure pre-2005	DE incumbent I/S disclosures	No DE incumbent I/S disclosures	Usual incumbent leverage	Unusual incumbent leverage	Entrant tangibility below median	Entrant tangibility above median
POST x DE x Incumbent leverage	0.055***	-0.044	0.091**	0.020	0.168***	0.018	0.117***	-0.021
	(2.98)	(-1.11)	(2.14)	(1.06)	(3.00)	(1.01)	(4.46)	(-0.83)
Difference in POST x DE x Incumbent leverage across specifications	0.099**		0.070		0.151***		0.138***	
Test statistic	(2.28)		(1.51)		(2.67)		(3.80)	
N	128,597	108,498	112,224	124,886	69,364	69,383	69,300	69,305
Adjusted R^2	0.168	0.143	0.147	0.167	0.154	0.182	0.192	0.123
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-industry and region and year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FEs interacted with leverage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6

Mimicking in concentrated versus dispersed markets.

This table extends the main analysis (Eq. (2)) in Table 3 to include entrant-incumbent set observations in dispersed markets. We define a market as concentrated if the Herfindahl index is greater than or equal to 0.40 *and* there are fewer than or exactly ten incumbents in the incumbent set. A market is considered dispersed if either of these conditions is not met. The first column includes all observations and adds an indicator variable (Concentrated) for observations in concentrated markets based on the above definition. This indicator variable is interacted with all independent variables and fixed effects. The third column replaces region and year fixed effects with region-year fixed effects and populations those coefficients that are not perfectly collinear with the fixed effects and corresponding interactions. The dependent variable in each regression is entrant leverage. Leverage, tangibility, cash holdings, dispersion of incumbent leverage, GDP growth, capital formation per capita, and Herfindahl index are defined in Table 3. Controls are untabulated for brevity. All continuous variables are winsorized at the 2.5th and 97.5th percentiles. *T*-statistics (in parentheses) are calculated using heteroskedastic-robust standard errors clustered by industry and by macro-region. Statistical significance at the 1%, 5%, and 10% levels (two-tailed) are denoted with ***, **, and *, respectively.

	All observations with indicator for concentrated markets	Region-year fixed effects
	Entrant leverage	Entrant leverage
Concentrated		-0.064
		(-0.98)
Incumbent leverage x Concentrated		-0.004
		(-0.25)
POST x Concentrated		0.040***
		(2.98)
DE x Concentrated		0.134***
		(4.56)
POST x DE	0.030***	
	(2.90)	
POST x DE x Concentrated	-0.039**	-0.085***
	(-2.12)	(-3.90)
POST x Incumbent leverage x Concentrated		-0.054***
		(-3.36)
DE x Incumbent leverage x Concentrated		-0.133***
		(-3.80)
POST x DE x Incumbent leverage	-0.021	
	(-1.42)	
POST x DE x Incumbent leverage x Concentrated	0.058**	0.103***
	(2.39)	(3.85)
N	914,124	914,179
Adjusted R^2	0.237	0.238
FEs	Country-industry, region, and year	Country-industry and region-year
FEs interacted with leverage	Yes	Yes
Concentrated indicator interacted with FEs	Yes	No
Controls	Yes	Yes

Table 7

Falsification test—mimicking smaller incumbents.

This table presents the results of a falsification test where entrants are matched only to smaller incumbents. An incumbent is considered smaller than an entrant if the incumbent's total assets are less than the entrant's total assets. All other aspects of the entrant-incumbent matching procedure remain the same. The first column estimates Eq. (1) and the second column estimates Eq. (2). The dependent variable in each regression is entrant leverage. Leverage equals total liabilities divided by total assets. Post equals one for years 2008 and 2009 and zero otherwise. DE equals one for German firms and zero otherwise. Tangibility equals total fixed assets divided by total assets. Cash holdings equals cash and cash equivalents divided by total assets. Dispersion of incumbent leverage is the standard deviation of leverage among the matched incumbent set. GDP growth is annual growth in GDP at the macro-region level. Capital formation per capita is the natural logarithm of capital investment scaled by population at the macro-region level. Herfindahl index is formed based on the total assets of incumbents at the country-industry-region-year level, where industry is categorized using four-digit NACE Rev. 2 codes and region is categorized using abbreviated postal codes. All continuous variables are winsorized at the 2.5th and 97.5th percentiles. *T*-statistics (in parentheses) are calculated using clustered standard errors at the industry and macro-region levels. Statistical significance at the 1%, 5%, and 10% levels (two-tailed) are denoted with ***, **, and *, respectively.

	Baseline	Difference-in-differences
	Entrant leverage	Entrant leverage
Incumbent leverage	-0.001	
	(-0.37)	
POST x DE		0.002
		(0.24)
POST x DE x Incumbent leverage		0.006
		(0.75)
Entrant tangibility	0.212***	0.213***
	(16.55)	(16.80)
Incumbent tangibility	-0.017***	-0.019***
	(-2.71)	(-2.78)
Incumbent cash holdings	-0.034***	-0.033***
	(-3.21)	(-3.05)
Dispersion of incumbent leverage	0.006*	0.005
	(1.84)	(1.53)
GDP growth	-0.161***	-0.185***
	(-3.89)	(-4.05)
Capital formation per capita	0.019*	0.018*
	(1.71)	(1.68)
Herfindahl index	0.008	0.007
	(1.19)	(0.87)
N	94,106	94,106
Adjusted R^2	0.219	0.222
Country-industry and region and year FEs	Yes	Yes
FEs interacted with leverage	No	Yes

Table 8

Mimicking of debt structure maturity.

This table presents the results of the main tests with alternative definition of leverage. Leverage equals long-term liabilities divided by total liabilities. The first column estimates Eq. (1) and the second column estimates Eq. (2). The dependent variable in each regression is entrant leverage. Post equals one for years 2008 and 2009 and zero otherwise. DE equals one for German firms and zero otherwise. Tangibility equals total fixed assets divided by total assets. Cash holdings equals cash and cash equivalents divided by total assets. Dispersion of incumbent leverage is the standard deviation of leverage among the matched incumbent set. GDP growth is annual growth in GDP at the macro-region level. Capital formation per capita is the natural logarithm of capital investment scaled by population at the macro-region level. Herfindahl index is formed based on the total assets of incumbents at the country-industry-region-year level, where industry is categorized using four-digit NACE Rev. 2 codes and region is categorized using abbreviated postal codes. All continuous variables are winsorized at the 2.5th and 97.5th percentiles. *T*-statistics (in parentheses) are calculated using clustered standard errors at the industry and macro-region levels. Statistical significance at the 1%, 5%, and 10% levels (two-tailed) are denoted with ***, **, and *, respectively.

	Baseline	Difference-in-differences
	Entrant leverage	Entrant leverage
Incumbent leverage	0.033***	
	(6.93)	
POST x DE		0.000
		(0.04)
POST x DE x Incumbent leverage		0.035*
		(1.95)
Entrant tangibility	0.290***	0.289***
	(17.44)	(17.26)
Incumbent tangibility	0.007	0.007*
	(1.53)	(1.67)
Incumbent cash holdings	-0.015***	-0.013**
	(-2.83)	(-2.48)
Dispersion of incumbent leverage	-0.049***	-0.049***
	(-5.94)	(-5.76)
GDP growth	-0.031	-0.038
	(-1.25)	(-1.55)
Capital formation per capita	0.008	0.008
	(1.02)	(1.00)
Herfindahl index	-0.014***	-0.011**
	(-3.26)	(-2.54)
N	123,299	123,299
Adjusted R^2	0.250	0.255
Country-industry and region and year FEs	Yes	Yes
FEs interacted with leverage	No	Yes